# Supervisory Management

APRIL 1956

## HOW CAN QUALITY BE CONTROLLED?

Quality control offers no miracle cures, but used effectively it can be an aid to production

## WHAT MAKES AN ABSENTEE TICK?

Absenteeism is expensive but there's a lot a supervisor can do to reduce this cost

## GUIDE TO GOOD WELDING PERFORMANCE

Tips on how to get the best results from different kinds of welding equipment

AMERICAN MANAGEMENT ASSOCIATION

## EDITOR TO SUPERVISOR

AN EMPLOYMENT manager who has been hiring men for many years told me the other day, "Applicants seem to be asking less and less about opportunity on the job, and more and more about security. Even young fellows inquire about our pension program early in the interview."

No one would argue against a person protecting himself for the future. And pension programs have an important place in our society. But one can't help wondering whether our country would have made such progress if other generations had put security ahead of opportunity. Perhaps in trying to solve one type of problem we have created another: a widespread over-protectiveness.

A boyhood playmate of mine named Stephen had parents who wouldn't let him climb trees. They were afraid he might get hurt. This was unfortunate because in our neighborhood there were several large beech trees that were ideal for climbing. All the kids became agile as monkeys climbing those trees. It was an important part of our development, I think, to gain confidence in our ability. Sometimes we took a tumble, but no one was ever seriously hurt.

Stephen used to watch us longingly while we were climbing. He wasn't a very happy boy. And later, he wasn't a very self-reliant man. He'd been over-protected. He paid a considerable price for his safety and security.

Some men, too, pay a high price for security. In trying to eliminate the risks from living they often mark time in a job they don't really like while they wait for retirement. In over-protecting themselves they lose the zest for living. They stop growing because they do not put themselves to the test.

A certain amount of risk does something constructive to a man. When he wades through obstacles, fights odds, and finally attains a difficult goal, he acquires confidence and resiliency. Even if he doesn't reach every goal he becomes able to bounce back from adverse circumstances that stop a lesser man. And, strangely enough, though security was not originally sought by the man who was willing to take a chance, it comes to him anyway. It's a richer kind of security; it's emotional security.

Hubert Clay

# Supervisory Management

VOL. 1 NO. 5 APRIL 1956



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SUPERVISORY MANAGEMENT is published monthly by the American Management Association, 1515 Broadway, Times Square, New York 36, N. Y. The Association does not necessarily stand sponsor for views expressed by the authors in articles issued in or as its publications. Subscriptions: $6.50 per year (nonmembers $7.50), bulk rates available. Volume 1, No. 5, April 1956.


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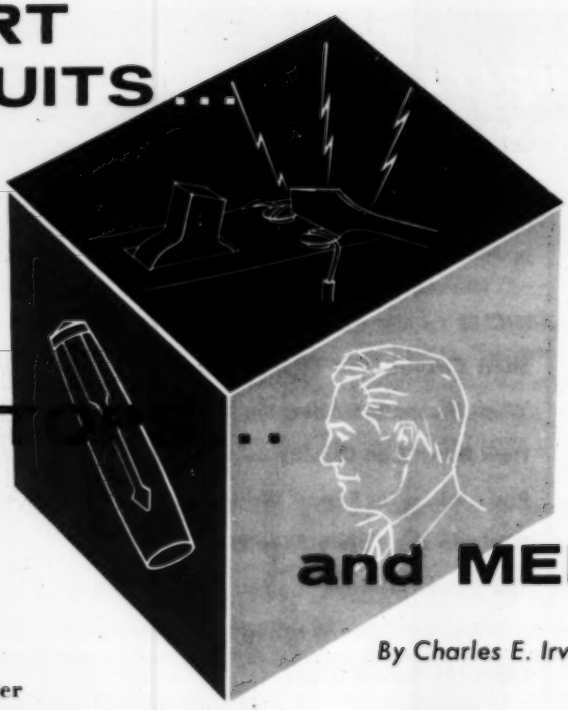
# SHORT CIRCUITS . . .



# PEN-TOPS . . and MEN

*By Charles E. Irvin*

**If you look "under the hood" of a good supervisor or executive, what do you find?**

WE WERE almost at the portable stairs leading to the passenger compartment of the Super Constellation when the loudspeaker blared: "Will passengers on X Airlines, Flight 302 please return to the terminal. There will be a slight delay in departure time due to an equipment change. Thank you."

A passing mechanic, speaking too loudly to another worker, gave us the answer . . . a short circuit in No. 2 motor. Some place in the miles of electric wiring there was a tiny break. But small as the break might be, it was enough to ground $347,000 worth of airplane. There it rested in the sun, beautiful and expensive; but completely useless.

The delay promoted conversation among passengers. One business man said to me, "Our company is like that plane; some of our departments haven't enough spark to light up the tail end of a lightning bug." He obviously meant that men can become short circuits, too.

There are several short circuit

types: managers who won't delegate authority; executives who are afraid to surround themselves with men who can do some things better than the executives themselves can; supervisors whose judgments become distorted by self-importance or who are afraid of new ideas. Every organization which charges men with responsibility runs the risk of having the spark go out of that charge.

### *Masquerade and camouflage*

Recently, one of the country's largest manufacturers of pens and pencils received an order from India for 10,000 pen-tops. Not complete pens—just the tops! The company's consternation simmered down when they were advised by an authority on India that a fountain pen, clipped to an outside pocket and seen in public, is a symbol of high-level cultural and social standing in that country.

Not everyone in India can afford a whole pen, but many can scrape together enough money to purchase a pen-top. These they wear. When the pen-top is seen (and that is usually all that is visible of a pen being worn) it becomes a symbol of culture and social level. The whole thing is a sort of masquerade, because there are no "business ends" to those pen-tops!

The people of India, however, are not the only ones who adopt strange devices for the sake of appearance. People have resorted to camouflage since the Year One. From padded shoulders, to boosted bosoms and lipstick, we indulge ourselves in symbols; and get away with it . . . almost. Eventually, the wearer of the symbol has to put up or shut up. But during the time that his deception is successful, he gains a temporary advantage—at least in his own eyes.

Men in management resort to camouflage too. They may possess a title which is their "pen-top." Often there's no "business end" behind the symbol. Such men are only short circuits in the organization.

Luckily, business and industry are waging war upon short circuits and pen-tops through increased efforts in management training and executive development programs. Progress is promising. But too many training programs are "technique-centered" instead of "man-centered" and much remains to be done in predicting what kind of a man will make a good manager.

### *Under the hood*

If you look "under the hood" of a good supervisor or executive, what do you find? Not long ago, a company spent over one-hundred-thousand dollars in a personal research program to discover that its best executives were also the best husbands, the best fathers, the best civic work-

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ers, the best citizens among its entire personnel. Interesting, but costly. Particularly so when, by some study and observation on their own, the top brass could have found out the same things for nothing.

A man will not be a good supervisor or executive for an eight-hour day and a poor father, husband, and citizen the rest of the time. Leadership is made of sterner stuff. It's a twenty-four hour proposition. Here are five outstanding qualities that are, and always will be, at the core of the best management leadership.

1. *A deep faith in something bigger than himself.* A man of leadership finds that such a faith does two things. First it reduces him to size when he needs it most. George Washington Carver, famed Negro scientist, told this story on himself. When he was young and ambitious he prayed: "Lord, tell me all about the universe". The Lord looked down and replied, "Now, George, that's a pretty big order for a little guy like you; why don't you think of something else?". So Carver prayed again: "Lord, tell me all about the peanut". Smiling, the Lord said, "Now George, that's more your size". Dr. Carver did great things with the peanut. He convinced the farmers of Alabama that in addition to cotton they could grow peanuts and other crops. Since then, the peanut crop has brought the South an income of 60 million dollars in a single year. From the peanut, Carver made more than 300 products, ranging from salad oil to soap and ink.

The second thing which results from such a faith is a sort of spiritual vitamin that recharges personal batteries and refills dried up inner reservoirs. It gives that extra boost that men need at crucial times. Such a faith had Harlow Curtice when he announced in 1954 just as a national song of recession was reaching anthem proportions — that General Motors was launching a billion dollar expansion program. This public pronouncement of a faith in our economic future drove the doubt from the hearts of American businessmen the country over. Examples are legion. But this can be said: A man with such faith is more than an asset; without it he is more than a liability.

2. *A genuine willingness to be himself.* Emerson in his great essay on Self Reliance said, "...sooner or later, every man finds that to imitate is suicide". Yet, typical of our times is a statement published not long ago which reads: "Never have so many done the same thing under the same circumstances so repeatedly". It seems fashionable, even in business and industry, to adopt the color of the day, like a chameleon. But remember this. No chameleon can long escape being put on a plaid suit. He blows a fuse, trying to be all things at once.

3. *Real enthusiasm.* A teacher of ministers one time admonished a class of pre-ministerial students this way: "Boys, when you're talking about Heaven, let your face light up; when you're talking about Hell, your ordinary face will do."

Charles Schwab, one of the few men ever to be paid a million dollars a year in salary, said that his most precious personal asset was his capacity to arouse enthusiasm among his men. He added, ". . . take away my plants, take away my inventory, but leave me these men, and I'll build another steel empire." Inspired men have accomplished the impossible; men saturated with lethargy, soon sink into oblivion. It's funny about spirit; it always permeates a group from the top down.

4. *A desire to be sincere.* Today management is not only responsible for the transmission of technical "know-how", but is also responsible for the "will-do". The attitudes, feelings, sentiments of employees are major causes of concern today. Management, then, finds itself continually working in the realm of ideas.

Ideas are intangible; they must be sold. Employees trust the ideas of management only insofar as they trust the men in management. Sincerity comes from two Italian words, "cine sera", which mean *without wax*. Sincerity implies no sham, no deceit, no artifice.

5. *The ability to think in terms of the other fellow.* A leader knows the truth of the saying: "The most important five words are "I am proud of you; the next four are "What is your opinion?" the next three are "If you please;" the next two are "Thank you;" and the smallest word in the world is the pronoun "I."

Two bodies of water in the world are known equally well. One is filled with many species of marine life; its shores are beautiful to behold; men have praised it. The other contains nothing and its shores are ugly and eroded; men avoid it. Yet these bodies of water are remarkably similar. They are of similar size; they are in the same geographical area of the world; stranger yet, they are both filled with water from the same source—the wells and the springs on the plains of Lebanon. But the one with life in it and beauty around it, the Sea of Galilee, has an outlet. You can search the Dead Sea from shore to shore and top to bottom but you'll find no beauty, no life—no outlet; all take and no give.

These, then, are the major qualities that permit a man to accept responsibility for the work life of other men. These, then, are the raw inner materials that management development programs can fashion into a brilliant and promising corps of supervision equal to any challenge. ◆

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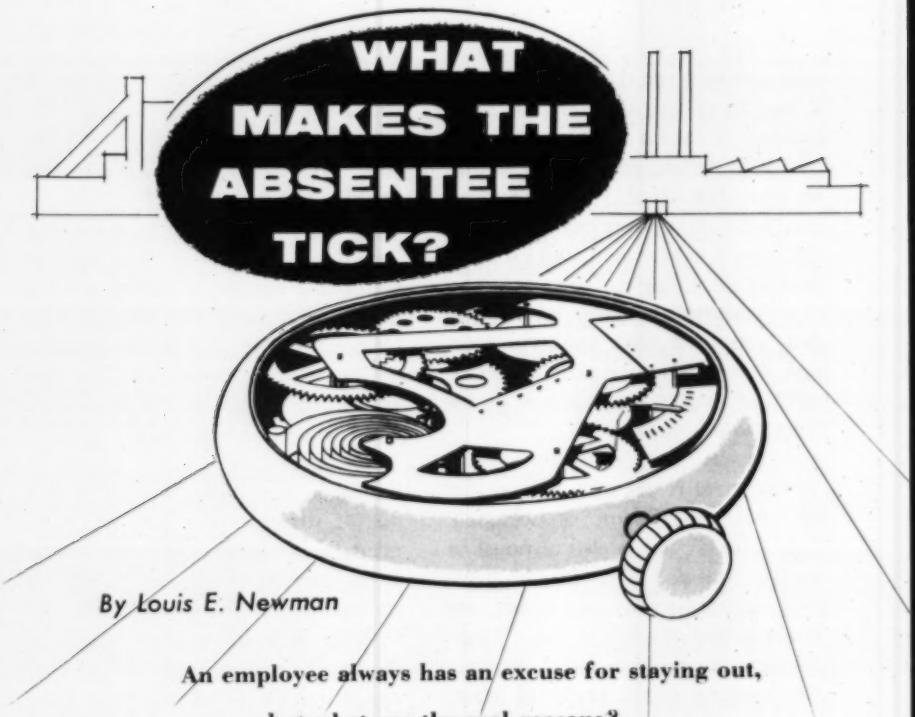
Labor disputes cannot be avoided by one side to a dispute; both sides must be willing to resolve the problems. And we should always bear in mind that there is always a third party involved in labor disputes—the general public. It has a real stake. Any labor dispute, no matter how small, affects the public in the form of purchasing power in that particular community.
—Robert I. Wishart, in AMA's *Personnel Series* No. 162




# WHAT MAKES THE ABSENTEE TICK?

*By Louis E. Newman*

**An employee always has an excuse for staying out, but what are the real reasons? What can the supervisor do about these reasons?**

THE OPERATOR of a drop forge hammer at a plant in Lynn, Massachusetts, was rarely absent. One morning, however, he failed to show up and his wife appeared at the plant gate to explain why he wasn't there. In her broken English, she said, "My husband, Joe, can't work today. He was up all night. He couldn't sleep, because, you see, last night I had a baby!"

Any study of absenteeism turns up answers as surprising as that one, because, more often than not, the people with the best reasons for being absent find a way to get to work—and those with much less reason for absence sometimes fail to come to work.

Studies have indicated that the big area for reducing absenteeism seems to lie within the control of the employees' own supervisor. The supervisor is the only person who is in daily, personal contact with the employees and who is in a position to

Adapted by permission from Minnesota Medicine, May 1954.

do the steady, day-by-day job necessary to reduce absenteeism.

Before presenting ways to cut down absenteeism, perhaps it would be worthwhile to go into some of the things that cause it. Is it sickness, personal business, accident, death in the family, or what? One study showed that absenteeism can be divided broadly like this: (1) absences chargeable to industrial accident or disease, 10 per cent; (2) respiratory infections such as colds, grip, etc., 45 per cent; (3) all other causes, including personal business, death in the family, etc., 45 per cent. But, in many cases, these are simply the excuses. The real reason might be "my job bores me stiff," "I hate the sight of my boss," or "I don't think my work group likes me." These reasons will rarely be stated since the employee often isn't actually aware of them; he just knows he would rather not come to work. When the worker feels that way, he makes his reasons fit the normally acceptable patterns.

### *Effect of travel*

In a check into the absenteeism problem at one of General Electric's plants, it was concluded that the high absenteeism rate was due to the fact that the employees traveled an average of twelve-and-a-half miles to the plant. To see if this was a real cause of absenteeism, a check was made into the records of a group which traveled more than 40 miles to come to work each day. The detailed check revealed that the employees coming from a long distance had attendance records as good or better than the employees who lived close to the plant. It was discovered that distance had very little to do with the absenteeism.

The Survey Research Center of the University of Michigan, in a study for the Detroit Edison Company called "What Makes People Absent" concluded:

(a) Regardless of the kind of worker, the treatment accorded him will raise or lower his rate of absenteeism.

(b) A bad attendance record doesn't necessarily prove an employee is completely irresponsible, nor does a good attendance record prove an employee responsible.

(c) Absences both among white-collar workers and blue-collar workers are primarily related to supervision, work associates, job status, and job satisfaction.

Sometimes a high absenteeism rate is laid to absent-prone employees—people who just seem to be absent more than average. Often, these absent-prone employees are said to be the main reason for the high absence rate. However, many times the absent-prone employees become nor-

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mal, steady workers when their home situation is corrected, their work is changed, or they get a new boss. The main cause again seems to come back to how the employee is motivated either to come to work or at work.

### *What about hourly employees?*

A common misconception is that absenteeism among employees on hourly wages doesn't cost anything—that the ones absent are the only ones who lose. A typical view of many people in management is: "Go after the salaried workers. We have automatic controls on the hourly workers. If they don't come in, they don't get paid."

But this isn't facing the fact that when hourly workers are absent, the company has the following losses:

1. Extra people on the payroll to take the place of those absent.
2. Idle machinery and unused investment.
3. Disrupted schedules and inconvenienced customers.
4. Higher inventory caused by delay in shipment.
5. Spoilage from substitute workers having to do jobs for which they have not been trained.
6. Overtime premiums paid to make up for lost time.

These losses far outweigh the money that the workers don't take home. In fact, for every dollar that the employees fail to take home because of absenteeism, it costs the company an additional one or two dollars.

Take a plant with about 300 workers and an average yearly payroll of about a $1,000,000. If the plant had 5 per cent absenteeism, it would mean the employees would lose about $50,000. But the loss to the company would still be between $50,000 and $100,000. Not all of the losses from absenteeism can be saved, of course, but enough of the cost can be reduced to more than pay for a program specifically designed to cut absenteeism.

### *Factors affecting absenteeism*

Sometimes outside factors such as the weather will affect the absence rate of employees. During a survey, one plant discovered an absenteeism rate of 8½ per cent for one of its departments, which had several thousand employees. One reason given was that the town had pretty rugged winters and the rate of absenteeism was measured during one week when there was a very bad blizzard. However, another department, in the same plant, with 4,000 employees, had an absenteeism rate of a little over 4 per cent for the same week.

There is no one answer to what causes absenteeism—the type of industry, the plant location, the size of the town, or any other factor, but overall it can be said that:

Absenteeism gets worse
- with the winter months
- with a higher proportion of female workers
- with high levels of employment
- with prosperous working conditions
- with conflicts in the work area.

Absenteeism is reduced
with good supervision
with adequate controls
with interesting work
if each employee has a high "sense of participation."

### *What the supervisor can do*

Supervisors are normally held responsible for cost control, maintenance of quality, and for keeping production on schedule. Since regular, on-time attendance is essential in carrying out these responsibilities, it follows that it's up to the foreman to encourage regular attendance in his work group. Since the employee's attitude about his work, his supervisor, or conditions in general seems to be the main factor in absenteeism, it becomes a problem in human relations. The supervisor has to create the right work atmosphere, be fair and firm in all his dealings, and give employees a sense of belonging and contributing.

One of the most effective things a supervisor can do to cut down the absence rate is to tell employees they were missed as soon as they return. This can be done by making comments like:

"Glad you're back, Joe. We needed you yesterday," or, "We sure had to scramble to get along without you. Hope we don't get in that fix again."

In other words, emphasize the fact that the employee was missed, that he was needed on his job, rather than probing for an excuse as to why the worker was absent.

What it boils down to is that a supervisor should:

1. Recognize that regular attendance of his work group is his own personal responsibility.

2. Build an atmosphere in his department that will make employees feel like giving their full skill, care and effort to their jobs.

3. Be aware that absenteeism is extremely costly to his company. ◆

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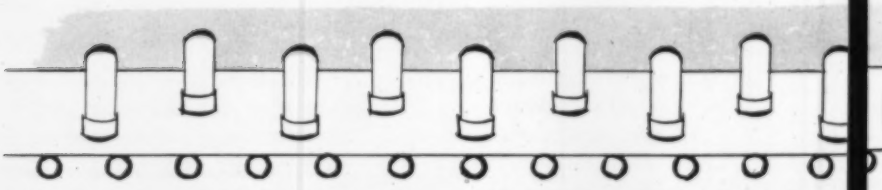
## The Laziest Man in the Shop

Occasionally the supervisor should learn instead of correct. Walter P. Chrysler, Sr., said that more advances in the use of man-hours in the Chrysler Corporation have been made by one procedure than by any other and that he had picked this idea up as a young man. He said: "Whenever we had an operation that seemed to be taking too many man-hours, we looked around the department until we found the laziest man. We put him on the job and then left him alone. We gave him ten days, and he had an easier way to do it. Then," said Mr. Chrysler, "we adopted the procedure across the plant."

Suppose that the first time that man changed slightly from the accepted practice some foremen had said to him, "That's not the way to do it—we do that this way." How much advance in procedures would ever occur? You can never tell who will be able to suggest ways to improve your plant operations. Never discourage suggestions from anybody because you may be robbing your organization of improvements that you yourself had never thought of.



# HOW MUCH CAN QUALITY

*By Carl L. Smith*

**If it's operating effectively, quality control can do a lot to streamline production. Here are some case histories showing exactly what quality control can do**

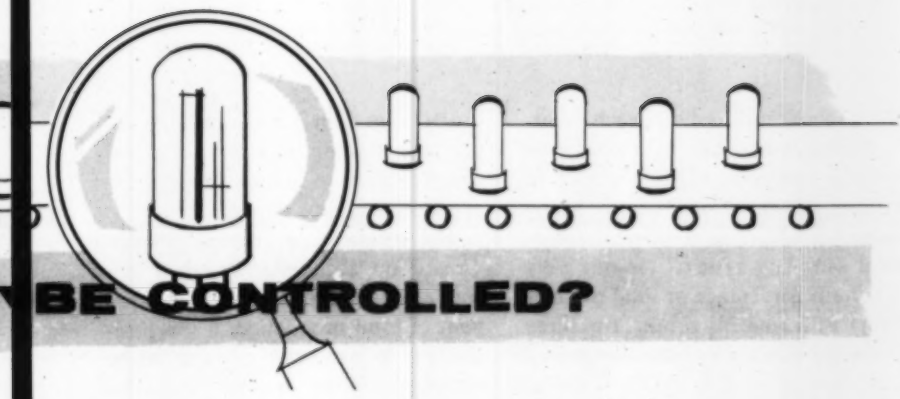
QUALITY control is a way of increasing production by reducing rejects. That's the aim but sometimes it doesn't work out that way. When it doesn't, it's usually because management didn't integrate the quality control program into its over-all production operations.

It's impossible for quality control to operate effectively in a vacuum, and, of course, it can't be of any use on the strength of its technical accomplishments alone. Quality control has to take its place among staff functions the same as the accounting, sales, or personnel departments.

The supervisor is responsible for cost control, housekeeping, safety, and the equipment in his department. To carry out these responsibilities, he gets help from accounting, safety engineering and maintenance. He is also responsible for quality control, and as a result the quality control department should assist him as a staff function. Given its proper place in an organization, the quality control group can do a good job, but it shouldn't be expected to come up with "miracle cures."

On the production line, one of the functions of quality control is to provide "hot facts" on defects that may be showing up. This information has to be relayed as quickly as possible to the person who can make whatever changes are necessary.

Of course, immediate shutdown of a production line is one way to halt defects. But this may not be the right procedure unless the defects are showing up at an unusually high rate or the seriousness of the defect is extremely critical. In fact, it's usually a mistake to shut down a production line when the defects can be eliminated at small cost by a subsequent operation or by more intensive inspection. Reason for this is that the production lost while the machines



## BE CONTROLLED?

are down may be more than the cost of removing the defects.

In many plants "trouble indicators" such as colored lights, flags or buzzers, are used to call attention to a problem on the production line. On one of our processing operations, for instance, we use a centrally located overhead panel with a pair of lights—one red and one green—for each machine. Routine spot checks of the production flow are made at prescribed intervals. When defects beyond acceptable limits are observed, the spot-checker immediately switches on the red light to signal the area machine adjuster. She also records her findings on a control chart at the machine.

The machine adjuster, seeing the red light, goes to the machine, reads the notation on the chart, and makes the necessary corrections. He then switches on the green light, but does not switch off the red light. When both the red and green lights are on, it's a signal to the spot checker that a correction has been made and a recheck is in order.

If the recheck sample shows the correction was effective, both lights are turned off. But if the defectives are still coming off the line, the spot checker switches off only the green light and the cycle is repeated.

Another example of how effective quality control pays off: It was customary practice in one of our plants to have a particular product tested before it was sent on for the final production operation. Since defects turned up in the course of the final production operation, a final inspection was also necessary. A study by the quality control department of the production procedure and the test records of the two inspection stations indicated that the first inspection was unnecessary. Eliminating this inspection step resulted in a saving of about

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three thousand dollars each year.

Management has to move cautiously, however, when it comes to cutting down on inspection. Many companies have used different statistical sampling systems (testing only a certain percentage of total production) with amazing results. But there is danger that the sometimes startling cost reductions that can be made by substituting statistical sampling for complete inspection may blind management to the more important, but less known, uses of quality control.

When a sampling inspection system is introduced, in place of 100 per cent inspection, the initial savings may be extremely high because the previous 100 per cent inspection procedure was unnecessary and cost much more than it was worth. Trouble may develop, however, if an attempt is made to reduce sampling inspection to a bare minimum.

For example, if current practice (based on accumulated defect history) is to inspect a sample of 4 per cent of total production, a sharp reduction in inspection costs could be achieved if the sample could be reduced to 2 per cent of total production. To make this reduction in inspection feasible, the production process must first be improved to cut down on the defect rate. Obviously, if inspection is drastically reduced, a company is taking too much of a chance if it doesn't take the steps necessary to reduce its defect rate. It might turn out, however, that the

It's a new sorting method I worked out — when he points, it's fowl.

cost of engineering time, machine downtime, maintenance, or new equipment that would have to be purchased to improve the production process would amount to more than the savings resulting from reduced inspection.

In some cases 100 per cent inspection is cheaper than improving the process so that tests can be made of limited samples of total production. For example, with products like resistors, screws, dowel pins, bearings, lumber and many other graded or tolerance products, customers, though using the same items, may have different requirements when it comes to tolerance limits and specific characteristics. One user, for instance, may not need a screw with as close a tolerance as that required by another.

In a case like this, the ideal situation is one where the natural variation in the production operation produces different grades of products in exact proportion to demand. For example, take a case where demand is such that one-third of a plant's production of a certain type of screw has to meet very exacting tolerance requirements, while the remaining two-thirds doesn't have to meet such exact specs. It would be ideal, if in the process of producing the screws, one-third came out with the exact tolerances required, while the other two-thirds, though not measuring up to the exact specifications, were still good enough to meet the needs of other users. With this kind of setup, all that is necessary is a sorting program to separate the two grades of screws and a system for keeping the process centered.

What can the quality control department do to help the production staff? Here are a few examples:

1. Standardize the definition of what makes an item defective—setting the limits in which a product can vary but still be usable. Having a firm policy on defects eliminates the haggling and production delays that result if standards fluctuate from day to day or from inspector to inspector.

2. Reduce number of defects and improve production procedures. Quality control systems sometimes point up flaws in a process and indicate ways to lower the reject rate.

3. Fewer customer complaints—quality control promotes a quality consciousness in the plant, and as part of its work, the quality control group should maintain close liaison with the sales department (including trouble shooting visits to customers' plants) and should tailor the quality control system to customers' needs.

### *The quality control engineer*

As part of this service to the production department, the quality control engineers should:

1. Find out if the production process is stable under exposure to reasonable variations in materials, operator skills, and machine variability.

2. Know the critical points of process control, with respect to costs, yield, and performance.

3. Check to see if finished pieces behave uniformly under test.

4. Find out just how the various

quality control operations fit in with production procedure. Are quality control operations slowing production unduly?

5. Find out which of a variety of material, machines, and processing combinations provide the best results most consistently.

6. Check to see whether the test equipment is capable of the precision needed to meet specifications.

As an indication of what a quality control engineer does on the job, here are some specific examples:

Automation was being planned for one of our product lines when a major problem developed. A small metal piece, made in our shops, was jamming on the production line because it was frequently off-size. The piece was turned out by shearing and punching from strip stock purchased to finished width. The quality control engineer tracked the jamming down to variations in width of the strip stock. The variations were small, but were enough to cause the jamming. To get what we needed seemed to mean that premium-priced strip stock would have to be purchased, but cost considerations made this impractical.

### *Quality control's solution*

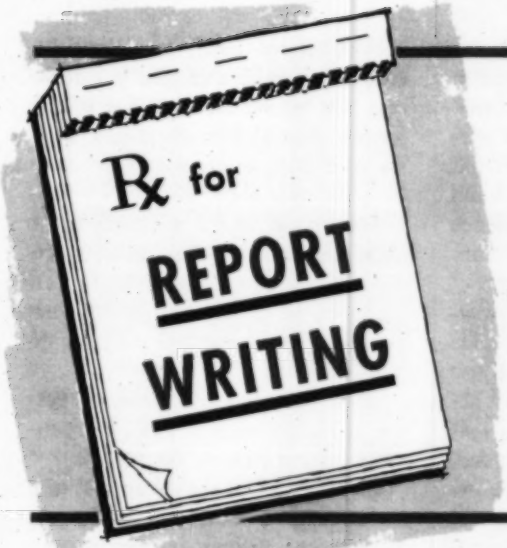
Quality control came up with another solution: buy a wider strip and punch out the whole piece in our shops. This would put the necessary control of width in our hands and permit the automation assembly development to proceed. The extra cost to make this change was limited to the price of a new die and the slightly higher cost of wider commercial strip stock.

In another case, a new process was introduced that was delivering a final yield of 85 per cent. This wasn't good enough since it left only a marginal profit. Another factor in the small profit margin was the cost of 100 per cent inspection to eliminate defects.

A study of the operation showed that two of the 17 stations in a gang mechanical device gave significantly better yields than the rest. Curiously enough, these two machines were found to be out of alignment. The quality control department suggested that all the other machines also be set out of alignment. The development engineer however, felt that unit breakage would increase too much if he did that; besides, it violated good engineering principles.

A carefully supervised experimental run was made with some of the machines out of alignment. Results showed that the higher production yield far outweighed the increase breakage cost, partly because the machines culled out the defects automatically. As a result, all the machines were intentionally misaligned and the 100 per cent inspection procedure was eliminated.

These examples are indications of the kind of job quality control can do when it's operating in the right framework and has the cooperation of all departments. The production supervisor is likely to find that effective use of the quality control staff can make his job a lot easier. ◆




**Almost everyone in a management job has to write reports—and the higher up you go the more you have to write. Here's how to do it**

*By James Williamson*

REPORT WRITING can tie a man up in knots. It can ruin evenings and wreck weekends. But it's a chore few people in management can avoid and the higher they go, the more they have to write.

There's no way to make report writing easy, but there is a right way to do it—a way that may save time and should result in a better report. Just as good manners are the evidence of good breeding, so, it might be stated, is good report writing the evidence of intelligence. A good report is evidence of the writer's vocabulary, grammar, and rhetoric; it shows whether the writer can gather facts, evaluate and analyze them and then reason logically.

The first factor that has to be considered is the attitude of the person writing the report. If he tackles the job unwillingly, or regards it as a distasteful chore, the chances are he'll do a sloppy job. The report may be inaccurate, poorly prepared and perhaps worthless. At the other extreme, a report written by a person whose enthusiasm for a pet project exceeds his sound judgment and logical reasoning, might evidence more opinion than fact, tend to be verbose and exaggerate needlessly.

Basic to any good report are what could be called the seven C's of good report writing:

| | |
|---|---|
| Clearness | Courtesy |
| Completeness | Candor |
| Conciseness | Character |
| Correctness | |

The report writer has to know the purpose of his report; he has to get all the facts and check them when necessary, and he has to analyze the

facts logically. In writing the report, he should keep in mind the person to whom the report will be addressed and try to select the method of presentation best suited to appeal to that person. Finally, the material should be arranged in a natural sequence and should lead to a logical conclusion.

Brevity is essential in report writing, though of course all the important facts must be included. All too often, however, a report fails to accomplish its purpose because the material is presented in a long-winded, round-about manner—like the copywriter who wrote: "The alkaline elements and vegetable fats in this product are blended in such a way as to secure the highest quality of saponification along with specific gravity that keeps it on top of the water, relieving the bather of the trouble and annoyance of fishing around for it in the bottom of the bath tub during his ablutions."

The advertising manager read over the copy, X'd it with a blue pencil and wrote down two words — "It floats." A good report writer gets his message across with as few words as possible, avoids repetition, and doesn't use a $64 word when a simple one will do.

The way a report is presented is also of utmost importance. Material should be arranged so that the reader can pick out the main facts and recommendations easily and quickly. And it has to be arranged in a form that will attract the attention of the reader, interest him while he's reading it, and leave him with a desire to do something about it.

Most good reports are made up of these elements: a title, an abstract, the introduction, body of the report, summary or conclusion. Here's how each of these sections should be handled:

Title: Should be an attention getter. It should be brief but clearly indicate the subject of the report.

Abstract: This should consist of a quick-reading statement of the important conclusions and recommendations.

Introduction: Here the purpose and scope of the report should be stated clearly.

Body of the Report: This, of course, will vary in accordance with the objectives of each specific *case*. But for a technical report, a logical way of handling the material might be: (1) a description of the apparatus, (2) a description of the procedure involved, (3) experimental data that has been developed, (4) discussion of all the facts that have been presented.

Use margins, put in subtitles, and for effect and to stress certain points —indent.

Conclusion: At the end of the report, the significant results should be

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summarized clearly. The conclusion should follow the same lines as the abstract only in greater detail.

To leave the reader with the feeling that he should take action after he has finished reading the report, it's important that the report ends with a punch line. Throughout the body of the report an effort should be made to lead up to a climax—then hit the reader between the eyes with the punch line—the need for his immediate action.

Many reports contain material which, though directly concerned with the subject matter, cannot be conveniently included in the body of the report. It is usually best to include this kind of information in an appendix. Typical material that might appear in an appendix are computation sheets, showing in detail all the calculations made in arriving at results discussed in the body of the report; graphs and charts; other material that has a bearing on the subject of the report but which is not a basic part of it.

None of these suggestions can eliminate the sweat and strain that often goes into report writing. But if followed, they should streamline the job considerably and make the report more readable and effective. ◆

"Why, hello, boss! Fred here was just talking about you."

*By F. W. Braun*

**"Seeing is believing!" And few men have actually seen an accident prevented by safety measures. How do you prove they're worthwhile?**

HE WAS A production superintendent who'd come up the hard way. From past discussions with him, I knew he was a dyed-in-the-wool skeptic, the type who vetoed anyone else's ideas. But one day when I stopped to talk to him about a safety problem, he really blew his top:

"You guys and your safety programs," he growled. "You're always thinking up some new gimmick to bother us about. So what happens? We still have accidents, don't we? It's just not worth it!"

He'd caught me off guard with his outburst, so I left him alone. I was pretty sure that he didn't really feel as bitter about accident prevention as he indicated, for he was one of the best men in the plant when it came to observing safety regulations. I wrote off his comments to a bad mood.

But he had started me thinking

about just how valuable safety is. Suppose a plant decided to give up all its accident-prevention programs. Suppose all the safety posters and signs were stripped down, all the safety literature was thrown out, the safety stripes on the stairs were painted out, all the meetings and contests were called off, and the plant was run on an every-man-for-himself basis.

What would happen? Well, first we would have to check the first-aid room. How many cuts and scrapes were treated? How many broken bones from falls? How many eye injuries? How many crushed toes? Then, we'd check the attendance records. How many employees were out as a result of injuries? How much time was lost? We'd make another check with maintenance. How many machines were damaged in accidents? How much equipment is on the repair list?

In a month, or perhaps even a week, we'd find out in a painful and expensive way that there is value in safety prevention after all. There would be definite proof of how important safety programs really are.

Evidence of the value of accident prevention was given by the National Safety Council recently when one of its studies showed that organized accident prevention has saved 500,000 lives in the last 40 years. That estimate was made after a long and careful statistical study. It means that almost as many people as make up the entire population of Minneapolis today are alive only because of these accident-prevention efforts. Consider that many of these people have special skills, talent, and knowledge that comes only from long experience. It all adds up to a dramatic example of the value of organized accident prevention.

### *Benefits are intangible*

There are other benefits from industrial accident prevention that could be pointed out to the safety skeptic. But the benefits that are probably the most valuable are the ones that can't be seen. Occasionally, benefits can be measured in time and dollars, but more often they are missed completely.

The trouble is that so many of the usual safety weapons have very little visible value. For instance, how do you figure the value of a safety leaflet or poster? Is it just a matter of adding up the cost of so much paper and ink—figuring the unit cost from the total run, and arriving at a value of a mere fraction of a cent? This would be only part of the value—the least important part. An estimate of this kind is based only on what the

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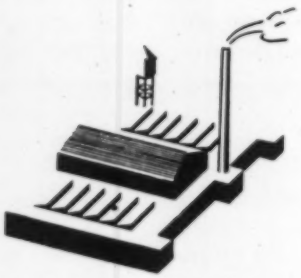
Mr. Braun is Vice-President, Accident Prevention Department of Employers Mutual Liability and Fire Insurance Co. of Wausau, Wisconsin. He was president of the American Society of Safety Engineers and the Wisconsin Safety Council and was a member of the Board of Directors of the National Safety Council. Mr. Braun is currently President of the Wausau Board of Education.

# Industrial Injury Rates

(according to latest figures available from the National Safety Council)



## FREQUENCY RATE

*DISABLING INJURIES PER 1,000,000 MAN-HOURS*

| | |
|---|---|
| COMMUNICATIONS | 1.30 |
| ELECTRICAL EQUIPMENT | 2.50 |
| AUTOMOBILE | 2.68 |
| AIRCRAFT MANUFACTURING | 2.82 |
| CEMENT | 3.38 |
| TOBACCO | 3.42 |
| STEEL | 3.85 |
| RUBBER | 3.97 |
| CHEMICAL | 4.12 |
| SHIPBUILDING | 4.23 |
| TEXTILE | 4.71 |
| STORAGE & WAREHOUSING | 5.02 |
| MISC. MANUFACTURING | 5.16 |
| MACHINERY | 6.23 |
| RAILROAD EQUIPMENT | 6.32 |
| PRINTING & PUBLISHING | 6.68 |
| GLASS | 6.76 |
| PULP & PAPER | 7.21 |
| ALL INDUSTRIES | 7.22 |
| SHEET METAL | 7.30 |
| IRON & STEEL PRODUCTS | 7.91 |
| PETROLEUM | 7.95 |
| NON-FERROUS METALS & PROD. | 8.04 |
| LEATHER | 8.56 |
| WHOLESALE & RETAIL TRADE | 8.60 |
| ELECTRIC UTILITIES | 8.62 |
| FOUNDRY | 8.81 |
| MEAT PACKING | 9.79 |
| GAS UTILITIES | 10.51 |
| CLAY PRODUCTS | 11.98 |
| SERVICE | 12.59 |
| FOOD | 13.24 |
| TRANSIT | 13.67 |
| WOOD PRODUCTS | 13.88 |
| AIR TRANSPORT | 14.26 |
| QUARRY | 14.93 |
| CONSTRUCTION | 17.29 |
| MINING, OTHER THAN COAL | 22.95 |
| MARINE TRANSPORTATION | 24.10 |
| MINING, COAL | 25.81 |
| LUMBER | 30.88 |

## SEVERITY RATE

*TIME CHARGES (DAYS) PER 1,000 MAN-HOURS*

| | |
|---|---|
| .13 | COMMUNICATIONS |
| .16 | PRINTING & PUBLISHING |
| .20 | ELECTRICAL EQUIPMENT |
| .21 | TOBACCO |
| .21 | WHOLESALE & RETAIL TRADE |
| .29 | MISC. MANUFACTURING |
| .30 | AIRCRAFT MANUFACTURING |
| .31 | AUTOMOBILE |
| .39 | RUBBER |
| .40 | LEATHER |
| .41 | WOOD PRODUCTS |
| .47 | MACHINERY |
| .53 | AIR TRANSPORT |
| .54 | TEXTILE |
| .56 | STORAGE & WAREHOUSING |
| .57 | CHEMICAL |
| .58 | SHEET METAL |
| .59 | RAILROAD EQUIPMENT |
| .59 | MEAT PACKING |
| .62 | GLASS |
| .62 | SERVICE |
| .67 | SHIPBUILDING |
| .69 | GAS UTILITIES |
| .73 | IRON & STEEL PRODUCTS |
| .80 | PETROLEUM |
| .80 | ALL INDUSTRIES |
| .86 | PULP & PAPER |
| .87 | STEEL |
| .87 | FOUNDRY |
| .89 | TRANSIT |
| .92 | CEMENT |
| .99 | FOOD |
| 1.23 | NON-FERROUS METALS & PROD. |
| 1.52 | ELECTRIC UTILITIES |
| 1.78 | CLAY PRODUCTS |
| 2.29 | CONSTRUCTION |
| 2.62† | QUARRY |
| 3.14† | MINING, OTHER THAN COAL |
| 3.16 | MARINE TRANSPORTATION |
| 3.68 | LUMBER |
| 4.79 | MINING, COAL |

literature is and not what it does. You can never tell when a message on paper might keep a man's hand from being mangled. You can never tell when a reminder in a leaflet might create or renew a man's caution. And who can tell when caution might save an arm, an eye, or a life? The piece of safety literature with an actual value of a fraction of a cent may have invisible value that's just about limitless. The same thing can be said of all the other conventional safety material—the ideas and interest generated in a safety meeting, the incentive sparked by contests and awards, and so on, down the line.

In addition to the basic tools used in accident prevention, there are intangibles to consider in a company's attitude toward the subject. Take a firm where management talks a lot about safety but never has time to show any real interest, never has time to sit in on meetings, or to take an active part in the program. In such an organization, there is something missing — something invisible but very real. When there is active enthusiasm and interest in accident prevention stemming from management, it spreads throughout the entire plant.

Since the purpose of safety is to prevent accidents, you can't see the damage, the bottled-up production, the injuries and the deaths that would have resulted without a safety program. You seldom can put your finger on anything and say: "Look, here's where safety paid off yesterday; here's where it's going to pay off next week—right here in this department . . . halfway down that assembly line . . . here at this machine."

Only rarely—once in a lifetime, perhaps—will you ever actually see safety pay off before your eyes. If you do, the experience will pack enough of a jolt to last a lifetime.

### *People are the problem*

Why is it that so many things involved in accident prevention—both methods and results—are intangible in nature? The main reason is that accident prevention is primarily concerned with human beings, who have a great deal of the intangible wrapped up in them. A machine is a tangible object; repairing it, improving it, making it safer—all these things are tangible and can be seen. But to fix a human worker's faults, to improve him, to make him safer, is an entirely different proposition.

You can check and perhaps improve, some of a worker's physical qualities—his eyesight, for example, or his health. You can give him safety shoes and safety glasses. But when it comes to making him wear the safety equipment, you're getting back to intangibles again. The mind, personality, thinking, memory, habits, emotions, and sense of caution are all intangibles; and they are the most important part of personal safety.

Any activity that deals primarily with human beings must deal with intangibles. Why? Because a person isn't something you just switch on, feed work to all day, and maybe "oil" once a week with a pleasant

word or a pat on the back. If a man isn't doing his job right, you don't tear him down like you do a machine —or if you do tear him down, there aren't any detailed drawings you can use to put him back together again. It's the intangibles in people that make them a big problem, but these intangibles are the same things that make people great, give them the power to reason and to create. They are the things that make accident-prevention programs pay off.

### *Accidents set insurance rates*

One very visible proof of the effectiveness of safety programs is the downward trend in workmen's compensation rates through the years. The rates, which are the insurance premiums a company has to pay for workers' disability insurance, are usually expressed in terms of how much the company has to pay per $100 of payroll. They are based on the accident experience of the given industry in a given state. If the accident rate goes down, so do the rates. If accidents become more frequent, the rates go up.

As an example of the sharp drop in compensation rates that's taken place since the Thirties, here's what's happened in Wisconsin:

The workmen's compensation insurance rate for machine shops in 1934 amounted to $2.58 per $100 of payroll. Since then the rates have gone down consistently, with minor fluctuations, so that at the beginning of 1956, the rate stands at $1.17—a decrease of nearly 55 per cent. Similarly, the rate for gray iron foundries has dropped from $4.38 in 1934 to $2.55 in 1956—a decrease of more than 47 per cent.

The rates for Wisconsin's steel foundry industry have shown an even more spectacular decline. In 1934, the rates stood at $8.06, and in 1935 it went still higher to $9.96. Today the rate stands at $3.22—a drop of almost 68 per cent. A decrease of this kind is possible only as a result of a tremendous improvement in accident prevention.

What do these decreases mean to a specific company which uses a good accident prevention program? One large metal working company used to pay a 17.1 debit on its rates. A debit is a kind of penalty added to the base rates because a particular company's accident rate is higher than average. The metal working company started an all-out safety program, and within a few years the debit changed to a 27.2 credit, or discount, on the base rates.

Industrial safety pays off in a lot of ways—it reduces operating costs—it prevents loss of time and material and damage to equipment. It improves efficiency in many cases, and on some operations safety measures have served to increase output. Accident prevention also improves employee relations and earns public good will. These benefits, in turn, help reduce labor turnover and thus save much of the cost of training replacements. That's the answer to the skeptic who wonders if safety programs are worth the effort. ◆

# THE GOOD OLD DAYS

## ...You Can Have Them!

**A company digs into its files and finds out what life in the plant was like on April 1, 1846**

EVERY ONCE in a while when the terrific tempo of today's modern living gives us a case of the "galloping geeters" and a buck seems to have no more significance than a cancelled cigar coupon, we get a strange urge for what is fondly known as "The Good Old Days."

Wouldn't it be wonderful to live the leisurely, graceful life of a century ago when a man with a fast fiver in his pocket really had it made?

We thought so too, until we started delving into the archives and came up with enough disillusioning facts to blight the life of a born optimist. Now we're firmly convinced that "The Good NEW Days" of today are the only ones worth settling for.

Still doubtful? Just step right into our Little Gem Time Machine and we'll set the dial for 1846. You're back in Worcester, Mass. The time is April 1, 1846. You're a wire drawer and you want a job. So what do you do?

You go down to the little factory of I. Washburn, Wire Manufacturer, naturally, and apply for one. Let's say you're lucky, and you get one. What next? Like any red-blooded American boy you start thinking

Reprinted from Wireco Life, American Steel & Wire Division, United States Steel Corporation

about wages, hours, pensions, social security, vacations, holidays, and stuff like that. You just think about them, that's all. You don't get a chance to talk them over with anybody because the Boss man says, "Report to work tomorrow morning one hour before breakfast. The first whistle blows at 5 a.m.!"

Maybe the ears aren't working right. Just to make sure, you slap

your head like a swimmer coming out of water and ask him to repeat that last remark, please.

By golly, that's what the man said all right – "One hour BEFORE breakfast! First whistle at 5 a.m.!"

To put it mildly, you're dazed. Just how dazed you don't realize until you discover you've walked away without

asking about the pay. Man, you're really dazed! But you're a good kid and you figure the sooner you start work the quicker you're through. So you report the next morning, like the man says, one hour before breakfast.

The work is heavy and there aren't any hoists around to help you lift the coils so you're pretty bushed by noon. But, a quick lunch of jerked venison (which you've jerked from the next guy's lunch pail) and your body relunctantly says, "Okay, Buster, let's have another go at it."

Three o'clock rolls around and you're ready to knock off. But everyone keeps right on working, so you stick. Comes 3:30, 4:00, and 5:30 and they're still hard at it. You think that this, with no trouble at all, could get to be a very unpopular thing with you.

Finally, at 5:30 the Boss man says, "Well, boys, it'll soon be time to go home for supper."

These are the great, big, gorgeous words you've been waiting for . . . since an hour before breakfast, already. Then he strolls over to you,

as you're gently massaging your aching muscles, and drops this bomb:

"Everybody reports back to work after supper, of course, and we work until 8:30, as per usual. A good day's work for a good day's pay."

This is leisurely living? This is the life graceful? This is strictly for the birds . . . if they'll have it.

But, curious at the mention of a good day's pay, you politely inquire, "Begging your pardon, Sir," and all that rot, "what about the pay for this —as you laughingly refer to it—good day's work?"

You learn, to your delight, that your starting rate is 50 cents a day, but that if you're a good boy and tote that bale real hard you can expect to be upped to six bits a day inside of six months and a dollar a day at the end of the year.

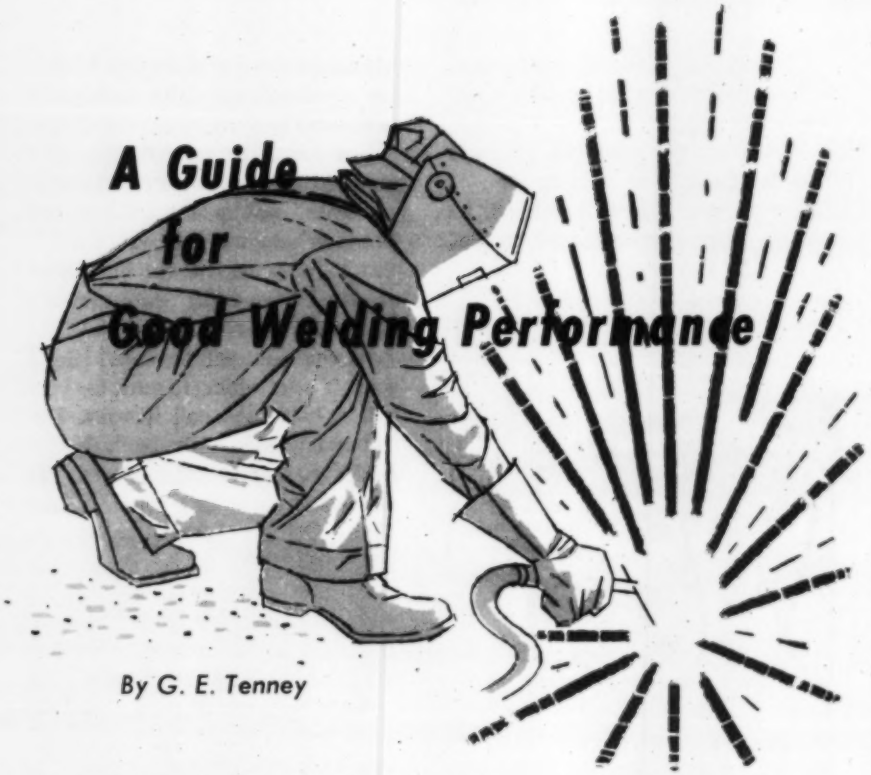
By this time you have had it—but good. You're willing to settle for your half a buck and call it quits. Unfortunately, there's another little gimmick you hadn't counted on. Pay day comes but twice a year . . . April 1 and October 1. And, remember, you started work on April 1.

A little lightning calculation on your part and you decide that six months is just a smidgen too long to hang around for a lousy half a rock.

With low, animal cunning and an acute rash of reasoning, you quickly step back into the Little Gem Time Machine, slyly set the dial for 1956, and take off. As the ship slides swiftly toward the setting sun you turn and wave goodbye, four fingers to the breeze whilst the thumb is firmly affixed to the nose. Farewell, beautiful "Good Old Days." Who needs 'em!

Perhaps you think this run-down on the "Good Old Days" we've just given you is the result of smoking an inferior brand of marijuana. Not so. These are true facts, as the fellow says, taken from the files of our historical records. Only the language has been changed to protect the innocent reader who may still be with us. We hope. ◆

# A Guide for Good Welding Performance



By G. E. Tenney

EQUIPMENT failure can be extremely expensive even when the repair bill is next to nothing—a factor that's sometimes overlooked is the production time that is lost.

The case of minor repair bills costing companies a lot of money is particularly true in the case of welding equipment. Most welding units are relatively small and easy to maintain or repair, but if they conk out, production can be completely stymied.

Following are some tips on the care and feeding of welder equipment which if carried out will mean fewer headaches for the supervisor. Various types of equipment and their basic service requirements are covered in this article.

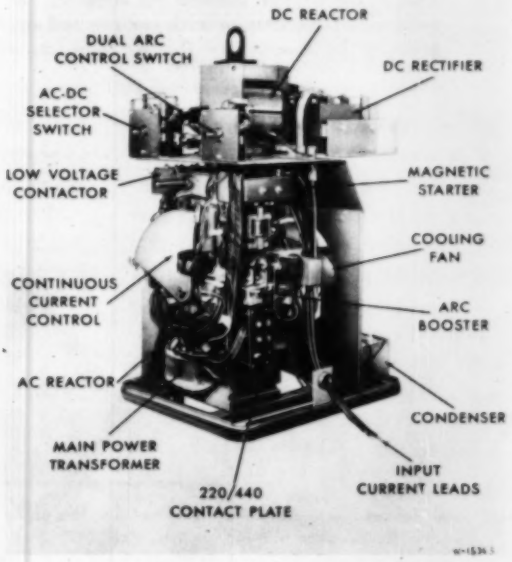
One of the most commonly used sources of welding current is the motor-generator set. In most sets, a generator armature and a motor armature (or rotor) are mounted on one shaft which rotates on ball bearings at the extremities of the shaft. The ball bearings are mounted in brackets which are attached to the welder frame. The frame houses the motor stator, the generator field coils and the exciter fields. The exciter armature is usually mounted on a sleeve or a stub shaft which is attached to the main shaft. Most motor-generator

sets are driven by three-phase, alternating current, induction motors. They deliver direct current and are commonly called AC-DC welders. Motor-generator sets with direct current motors are also available and are quite similar to AC-DC welders. Usually motor-generator sets turn at 1800 rpm.

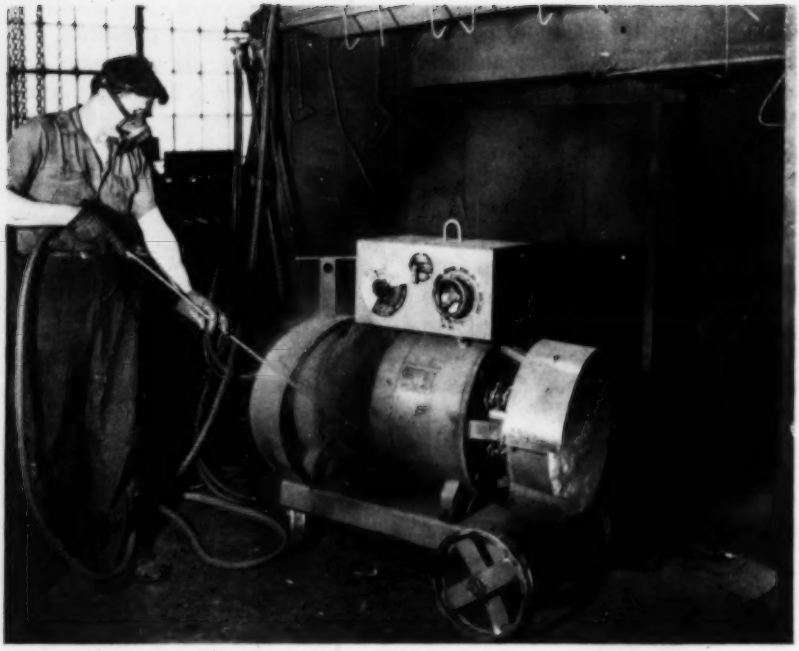
Alternating current welders are also widely used by industry and consist of a step-down transformer to transform the high input voltages into relatively low, safe output voltages, with a consequent increase in output current. The fan motor is the only piece of rotating equipment in transformer-type welding units, with the exception of the mechanism that is employed to vary the welding current.

Rectifier welders, producing DC welding current, are also used. This kind of machine is basically a transformer with a rectifier stack to rectify alternating current into direct current. The most recent type of welder is a combination transformer/rectifier unit, which produces both AC and DC welding current.

Thus, we have two basic and fundamentally different types of welders: the rotating motor-generator set and the non-rotating transformer, and transformer/rectifier welders. The machines mentioned are most often used inside a building of one sort or another and can be classified as either stationary or portable welders, de-




**An internal view of one of the newest type welders. This combination transformer-rectifier unit produces both alternating and direct welding current.**



**This is the proper method for blowing out the interior of an arc-welder motor-generator with compressed air. Cleaning the motor and greasing the bearings are the two most important maintenance items.**

pending on whether they are mounted on wheels. For field work, generators are coupled directly to an internal combustion engine which may be air-cooled or liquid-cooled and burn either gasoline or diesel fuel.

The different types of welding equipment vary tremendously, but their maintenance, though extremely important, is not too complex. The most effective maintenance tool is common sense, as records show over 95% of welder failures can be traced to neglect, improper operation or just plain abuse.

The best way to avoid trouble with welding equipment is to install it properly to begin with. "Musts" for stationary installations are:

1. Make sure there is adequate ventilation.
2. Avoid corners and walls which obstruct air flow.
3. Do not remove covers or

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Mr. Tenney is a member of the Board of Directors of the Lincoln Electric Co., Cleveland, Ohio. He has been with the company since 1932 serving as both District Manager and Service Manager. Mr. Tenney is a graduate of Ohio State University.

shrouds—they are on there for a purpose.

4. Support the unit firmly and evenly to avoid misalignment.
5. Use adequate input cable size and proper fuses.
6. Clean and tighten all electrical connections.
7. Follow the manufacturer's recommendations.

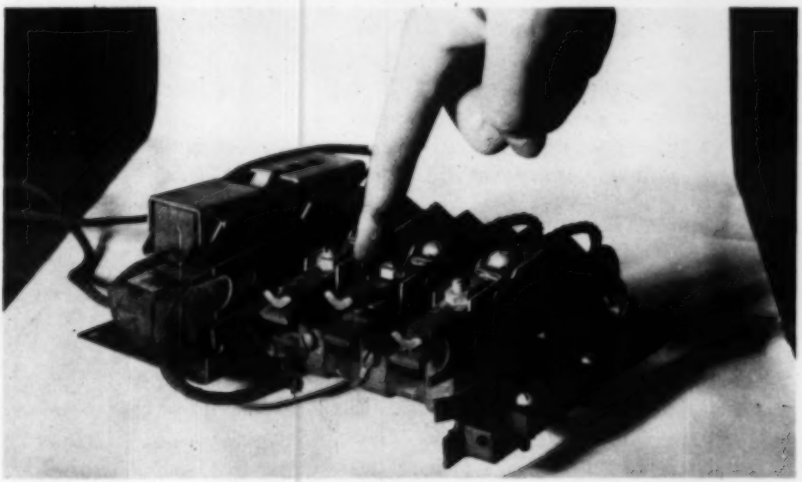
Portable welders operated in the field should be protected from the elements (if feasible) and kept as clean as possible. If the electrical coils get wet, be sure to drain out the water, and then dry out the coils by baking them in an oven at low heat (250° F. approximately).

Motor-generator sets depend on a rotating armature for current generation. If the power behind the rotating armature fails, the generator is of little or no value at all.

Electric motor maintenance is a fairly simple matter. Proper fusing against single-phase, input power conditions is essential. Thermal protection against overload and overheating is now provided by most manufacturers, otherwise a suitable thermostatic control should be installed. About all that is required for periodic maintenance is to keep the motor clean by blowing it out with low-pressure, compressed air and to grease the bearings once a year. Use the type of grease recommended by the manufacturer.

Internal-combustion, engine-driven welders present a more serious maintenance problem. Welder service is the toughest kind of duty an engine can get. The engine must deliver full and unfailing power each

**A faulty starting switch: the center contact is not properly aligned with the right or left contact. This causes arcing between contacts.**



time the arc is established. Most engines are equipped with idling devices which permit the engine to idle when current is not drawn from the generator. However, the engine must come to operating speed immediately after an arc is struck and the operating speed has to be maintained without surging under various load conditions. Only a well-maintained and properly-adjusted engine can meet these demands.

Daily inspection should cover:

1. Governor, idling device and other controls and linkages.
2. Proper engine speeds (idling and load speeds).
3. Air filter.
4. Carburetor or injectors and pumps.
5. Gas or fuel oil filters.
6. Starting motor, battery and generator.
7. Magneto or distributor and ignition cables.
8. Cooling system.
9. Oil level and condition.
10. Fan belts.
11. Engine mountings.

Dirt is the worst enemy of any kind of equipment, so filters on welder engines should be changed and serviced periodically. This may vary from every several days to twice or more per day under extremely dusty conditions. Engine bearing wear is critical in welding units as it can affect the armature air gaps. Clean oil will minimize this. Oil must not get into the generator windings as dirt will certainly accumulate there and air passages will become plugged.

Generator Maintenance

1. Blow out unit.
2. Inspect, adjust and replace generator and exciter brushes.
3. Inspect and clean commutators.
4. Inspect bearings, add grease at proper intervals and listen for unnatural noises.
5. Examine internal and external wires, connections and contacts.
6. Keep it clean.

Greasing and Overgreasing

Ball bearings when properly maintained should last approximately ten years. For every bearing that lasts ten years, at least nine fail due to dirt and/or overgreasing. Under normal operating conditions, welder bearings require one-half to one ounce of grease per year. One cubic inch of grease weighs approximately one ounce. Don't force grease into bearings under high pressure. Follow the manufacturer's recommendations – some sell grease specifically designed for their welder bearings, and it's best to use their product.

Up to this point, instructions have been confined to rotating equipment. Transformer and transformer/rectifier welders present virtually no maintenance problems. Proper installation is essential, of course, and the equipment must be kept clean. Periodic blowouts with low-pressure, compressed air are important. Contacts must be kept clean and all connections should be clean and tight. Fan motors which move air through the welders should be kept clean and lubricated. Fully enclosed fan motors are coming into use and these are

lubricated for life of the equipment.

Procurement of spare and replacement parts is not the headache it used to be as most manufacturers now have service shops in every principal city. Some service organizations offer an exchange plan where remanufactured armatures and stators are available at approximately two-thirds the cost of new components. These items are remanufactured to new component specifications.

### *How to figure inventory*

It is difficult to determine how large a stock of spare parts must be kept because local operating conditions vary widely. But the best way to figure out how large an inventory of spare parts should be kept is to analyze parts purchased over a four- or five-year period, then take into consideration the fact that more service is required on older machines than on new ones.

It is suggested that an extra set of bearings and brushes be kept on hand for two or three motor-generator sets. A set of starter contacts and control contacts for every two or three motor-generator sets and transformer welders should also be stocked. Experience is the best guide on stocking other replacement items.

Almost all manufacturers now use standard brand bearings; however, many bearings are made specifically for welder service. These special bearings are manufactured to the same exacting tolerances as standard bearings but have more clearance between the balls and races than do standard bearings. If such a bearing is replaced by a standard bearing, over-heating and premature failure will certainly result. Generator brushes are also specifically manufactured for welder use and must be replaced by identical brushes for best results.

**These burned-out armature coils were caused by overheating of the overloaded unit. The welder was operated above its capacity.**

### *Buy from manufacturer*

These illustrations point up the fact that replacement parts should be purchased from the manufacturer's authorized service shops or directly from the manufacturer.

Engine accessories are frequently modified for welder service, and to

insure best performance, these items should also be purchased through the manufacturer or authorized service shops.

Most fabricators maintain a supply of cable, lugs, connectors, and electrode holders. These items can be purchased economically in lots at a saving of as much as 25 per cent off the unit price. The same is true of brushes, helmets and lenses.

The dark protective lenses used with welding helmets are rather expensive and deserve to be protected. Good practice calls for a clear cover glass to be placed on either side of the protective lens to avoid pitting the dark lens from weld spatter. Cover lenses are available with a plastic coating to prevent weld spatter from sticking. Even so, the outside cover lens should be replaced periodically to avoid maximum eye strain.

Here are some ideas that will help a supervisor set up a welder maintenance program:

Establish a "reminder" file with a card for each type of machine. These cards should be filed by date so that they will serve as a reminder whenever the machines need servicing.

When a machine is due for inspection, a work order should be made out in duplicate for a maintenance man. He should be given the original work order while the duplicate is kept for follow-up. After the inspection is completed, the foreman or department head signs the order and approves the inspection time charged. When the order is returned, the man's time is charged to the proper account, and the completed work order is kept to provide a complete history of the machines.

### *Case history of machines*

For the smaller shop with only one maintenance man, a card can be attached to each welding unit containing a history of the machine. The information listed on this card would consist of the dates of inspection, greasing, brush changes, plus notes when replacement parts were put in.

Servicing of welders in the field is usually on a "when and if we have time" basis. Furthermore, it is often difficult to know exactly when an engine is due for service, since some units operate continuously while others remain idle. A service program based on the number of hours of operation is one approach. With this method, an engine-hour meter is used to indicate the number of hours of operation. Filter and oil changes, etc., can be specified at certain intervals depending on local operating conditions.

The foregoing comments have concerned manual arc welding equipment. Fortunately, automatic and semi-automatic submerged arc welders are also relatively easy to keep in good operating condition if they have been properly installed. Installation should be made with the help of a competent welding engineer and care of the unit should consist of the following:

1. The manufacturer's lubricating instructions should be carried out exactly.

2. Blow out wire drive rolls with compressed air every week.
3. Blow out control box every three months and inspect and clean all contacts.
4. If the automatic welding head is mounted on a carriage or tractor, the manufacturer's lubricating and other maintenance instructions should be followed.
5. Contact jaw and contact nozzle life can be prolonged by using "clean" filler wire. The wire should also be straightened to avoid excessive wear.

Most automatic welds are deposited under a blanket of granular flux. Usually automatic welding installations have provisions for handling fluxes without excessive waste. However, every possible precaution should be exercised to keep the flux out of the generators, fixtures and related equipment.

Semi-automatic welders should be blown out with compressed air periodically to remove chips and the manufacturer's lubricating and other instructions should be followed.

If the practices outlined in this article are carried out, the supervisor will find that his welding equipment will provide the kind of service it's supposed to. ◆

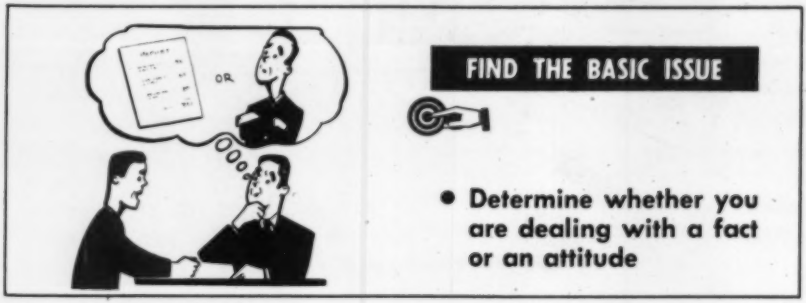
**"Forget your glasses again, Farnsworth?"**

# Can't We Talk It Over?

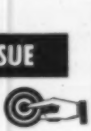
**To get your message across to employees: find the basic issue, clear the air, secure real interest, get a two-way flow, then settle on a course of action**

A supervisor cannot escape talking to people. He must be able to talk to his employees, and he must be able to talk to top management. The supervisor is in the critical position of interpreting one group to the other, and poor communication can often distort the information.

Esso Standard Oil Company has done a good job in boiling down the elements of good communication for supervisors in a booklet called "Can't We Talk It Over?" Parts of this book appear below.



## FIND THE BASIC ISSUE



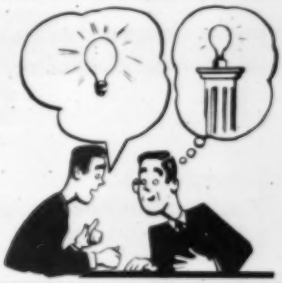
- Test for understanding

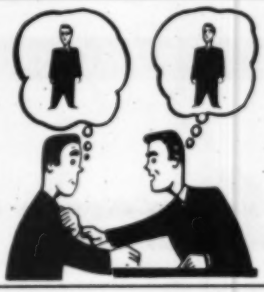
## CLEAR THE AIR

- Provide the right atmosphere to get him to talk

## CLEAR THE AIR

- Listen to him and respect his views





## SECURE REAL INTEREST

- Talk about the problem in terms of "you" and "yours"

## SECURE REAL INTEREST

- Point out benefits to him

## SECURE REAL INTEREST

- Present the issue in terms of a challenge

## GET A TWO-WAY FLOW

- Show willingness to re-examine your views

## GET A TWO-WAY FLOW

- Give him a chance to justify his opinion

## GET A TWO-WAY FLOW

- Get objections out where you can deal with them

## SETTLE ON A COURSE OF ACTION

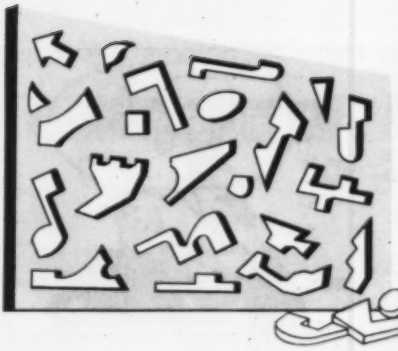
- Make it easy for him to accept

## SETTLE ON A COURSE OF ACTION

- Get him to help shape the idea

## SETTLE ON A COURSE OF ACTION

- Use reasons that seem valid to him



# attacking problems...

*By Zuce Kogan*

**Sometimes new solutions are hard to find.**

**This method may help**

PROBLEMS come up in every supervisor's job. In fact, it's being able to solve those problems that makes a supervisor worth his salt. No one can give you a formula for solving all the problems on the job, but you can learn ways of looking at the problems that may make them easier to solve. The way you look at the problem, or "approach" it, can give you a clue as to how to get at the solution. The purpose here is to introduce this *Approach Method*. Approaches are simple statements that consist of a packaged problem solution. There are many approaches already developed. The three discussed here are:

1. When working with large quantities, group them.

2. When continuity fails, alternate.

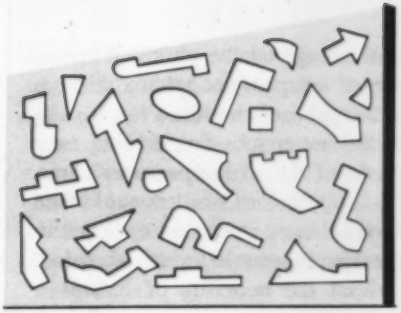
3. When the direct way fails, try the opposite.

When the famous mathematician Karl Gauss was a boy, his teacher asked him to add the numbers 1, 2, 3, 4, 5, 6, 7, 8, and 9. He merely glanced at the figures and said, "Forty-five."[1]

It's hard to tell how he arrived at the answer so quickly, but a good guess is that instead of adding them one by one, he grouped them. He may have seen the figures in groups of ten—1 plus 9, 2 plus 8, 3 plus 7, and 4 plus 6—and then figured 4 times 10 plus 5 equals 45. When Gauss found there were too many numbers to handle easily, he grouped them. This grouping approach works

(1) Kogan, Zuce, "Essentials in Problem Solving," 1951, Chicago, Ill. (Second edition now in press.)

# ...with the approach method...



on other problems as well as arithmetic.

Here's an example in materials handling. There are two piles of material to be moved and no machinery to do the job. Each pile contains about 50 pieces, but the pieces in one pile are small and heavy, and the pieces in the other pile are very light but bulky. The small pieces are so heavy you can't carry two at a time because of the weight and the light ones are so bulky you can't carry two because of the size. The moving job seems to call for a separate trip for each piece—100 trips. At first it might appear that the grouping approach won't work here but by grouping these two piles, you can carry one light piece and one heavy piece at the same time and cut the number of trips in half.

In another case, a cork winding department had three cork winders, each operating a single machine that makes wire coils. The cork winding operation required that the operators have a high degree of skill—and good cork winders were hard to find and commanded high wages.

The supervisor was asked if he could find some way of increasing production in the cork winding department. He noticed that the highly skilled cork winders were spending only one-third of their time in the actual winding operation, while the other two-thirds of their time was spent setting up the machines and other preparations. Analyzing the operations, he found the setup didn't require a very high degree of skill.

Therefore, he grouped the work into two kinds—the skilled operation

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Mr. Kogan has served as Director of the Creative Thinking Institute in Chicago since 1952. He has been a consulting engineer for more than 25 years. During this time he has developed several new products, improved processes and has served as a consultant on automation. Mr. Kogan is the author of more than 100 technical papers and two books.

of winding and the unskilled operation of setup. He suggested that unskilled laborers be hired for the unskilled setup job—thus freeing two-thirds of the skilled workers' time. Each of the cork winders could then operate three machines by himself. Production was increased threefold without the necessity of hiring—or finding—more high-skilled winders.

These solutions may seem obvious as you read about them. It's amazing, though, how frequently the "simple" solutions are overlooked. But if one is consciously thinking: *when working with large quantities, group them,* he is led directly to look for a solution in grouping.

### The "Alternation" approach

Sometimes we use an approach to solve a problem without realizing that the same approach can be used to handle many other, different problems.[2] For example when a foreman sees an operator idling, waiting for a machine to be reset, he realizes something has to be done so the operator on another machine can work more continuously. He therefore may give the operator a job on another machine to fill his idle time. (In a union shop this may, of course, pose a problem. However, unions are recognizing more and more the need for this kind of flexibility.) After a while, whenever he sees an operator idling while a machine is down, he associates it with: "give the operator a job on another machine."

Similarly, a gas station attendant has idle time while he waits for the tank to fill, so he cleans the windshield, checks the oil and water, etc. His association for idle time is probably: "When waiting for one operation, take care of another operation."

### Two people with two approaches

If both these men were suddenly transplanted to the same factory, they would probably look at problems from different points of view. The foreman would think in terms of "give the operator a job on another machine," while the gas station attendant would think in terms of "when waiting for one operation, take care of another operation." Suppose they both notice an employee idling in the factory stock room and ask him why. The employee says: "This afternoon I carried very heavy packages and I'm tired. I carried light ones this morning and didn't have to rest."

In this case neither the "give the operator a job on another machine" or "when waiting for one operation take care of another" kind of thinking can be applied directly. But if both the foreman and the gas station attendant could be shown that the principle behind both of their approaches is really "alternate the job routine whenever there is a breakdown in the continuity of an operation," they would see the problem of the idle package carrier in a different light. They would both be inclined to

(2) APPROACHES, Vol. 5: *Training for Ingenuity*, Creative Thinking Institute, 738 Sheridan Road, Chicago 13, Illinois.

approach the problem with the question: What can be alternated so that the package carrier will not become so fatigued? The solution that they might arrive at would be to have the worker alternate more frequently between carrying heavy and light weight packages.

We can see that all three cases have "continuity" as their problem and "alternation" as their solution, and that the approach: *When continuity fails, alternate* frees the foreman and station attendant from their specific ideas of machines and operations.

### *"Try the Opposite" approach*

In designing certain factory equipment, a consultant was looking for a way to increase the output above that of the equipment available on the market.[3] The fastest way to develop a new design is to find troublesome features in existing machinery.

So the consultant asked the foreman what complaints he had had about the present machine. The foreman said that they'd formerly had considerable trouble with this machine but that now it was considered to run perfectly. He then made it clear that he had no time to waste discussing the matter further.

The consultant couldn't talk to the actual operators of the machine because that might antagonize the foreman. Since the foreman had to approve any new machine, bypassing him would only lead to trouble later on. Nevertheless, the information had to be obtained somehow.

Since the direct way had failed, the approach: *When the direct way fails, try the opposite* was applied. The foreman was therefore asked to tell the *good* points about the machine. Being interested in stressing the good points (perhaps to prevent the new machine from being designed) he discussed them at length—and inevitably gave away the difficulties at the same time.

There are, of course, many ways to attack any problem. The type and conditions of work, the equipment and people available, the personalities of the men, even the season of the year and the weather can be important influences on the solution.

But certain basic kinds of problems recur frequently in every industry. The approach method discussed above provides us with simple "thinking tools" to handle a variety of these problems. They are not cure-alls but can be most helpful with problems needing a certain amount of ingenuity. They aid in the same sense that a small man who knows jujitsu can overcome a large opponent who has no knowledge of it. ◆

(3) APPROACHES, Vol. 1: *Improving the Perfect*, Creative Thinking Institute, Chicago.

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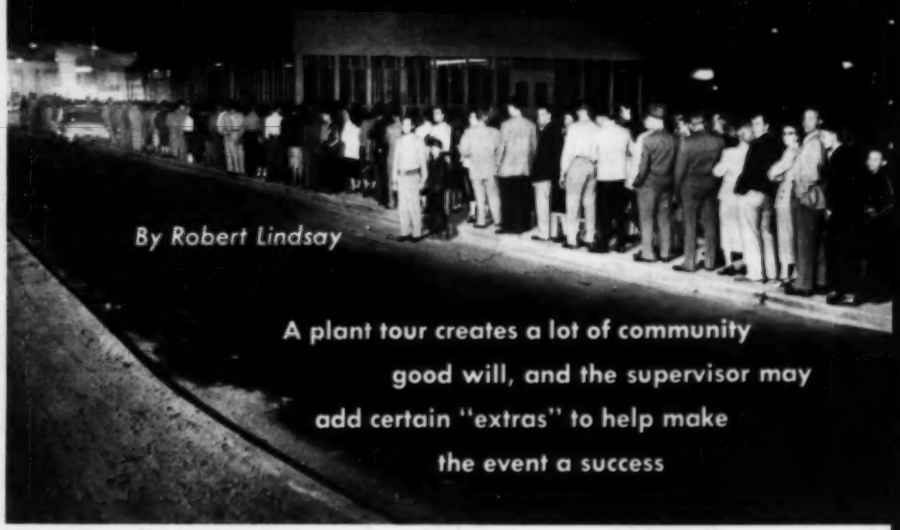
The way to get ahead is to start now. If you start now, you will know a lot next year that you don't know now and that you would not have known next year if you had waited.

—William Feather, quoted in *Forbes Magazine of Business and Finance*

# Open House: The Supervisor's Role



*By Robert Lindsay*

**A plant tour creates a lot of community good will, and the supervisor may add certain "extras" to help make the event a success**

MORE and more these days the American public is going visiting. On invitation, they're getting a behind-the-scenes look at their local schools, hospitals, and factories. Even the U. S. Navy, in recent years, has had open houses aboard ship; these are recognized as an effective way to show the taxpayer where some of his money is going.

Whether it's a plant tour of a local factory, or a ship tour on a Navy destroyer, the open house ranks as one of the most common and most effective ways to build good relations between an institution or company and the public.

In most companies, the public relations staff makes the over-all plans for an open house. Usually, the supervisor is simply given the date and time of the event, plus some advice on what is expected of his department. If that's the case, the supervisor is generally given a plan to follow. But if he's allowed to plan the arrangements for his own department, or is in on committees making the over-all arrangements, there are some "extras" that he can throw in to make the open house a memorable good-will event for the public and his company.

The average guest at an open

house is interested, first of all, in the plant itself—what it looks like, what goes on inside it, what its products are. He is also interested in the people who work in it. The job of the open house is to satisfy his curiosity about these things and also to get across the message of good will and to show what part the company plays in the economy of the community.

Following are some pointers for planning and preparation. If the supervisor is planning all the arrangements for his own department, these ideas may serve as suggestions. If the public relations department is doing the planning, some of the ideas may be used by the supervisor to spruce up his own department with "extras."

### *The department's appearance*

Getting the department spic and span for the open house should involve more than just a clean sweep-down or an extra pick-up of shavings from the floor. It should extend to a good job of housecleaning—including everything in the department—equipment, floors, and sometimes even arrangement. To speed the job, the supervisor can enlist the aid of everybody in the department. If they all pitch in, the job is half done. Some companies add an extra incentive to the clean-up by holding a plant wide contest for the department with the best appearance, with prizes for the winner.

### *Signs? Guides? Or both?*

A presentable appearance is only half the job; the visitors who come through the department will need to be told what goes on there and how things work. This can be done in two ways: signs and guides. Sometimes both can be used.

If signs are used, they should be placed strategically about the floor and on or near equipment. They should provide a simple, easily followed route through the department, leading visitors from one point of interest to the next.

The signs themselves should be cleanly lettered and easy to read. They should explain, in layman's language, what part each of the operations plays in the over-all production picture, why it is important and who does what. Some of the visitors, perhaps most of them, will be friends or relatives of the employees. They will want to know what those employees do and why it's important.

The signs should be kept pretty much at a minimum. Just enough should be used to tell the story fully and simply. If too many are used, a "clutter" effect results, confusing the visitor and prompting him to

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**Mr. Lindsay is on the public relations staff of the University of Wisconsin in addition to teaching public relations courses in the University's School of Journalism and the U. S. Armed Forces Institute. He is also news editor for Wisconsin State Station WHA-TV. He is a frequent contributor of articles on public relations and has written a history of Marine Corps public relations which will be published soon.**

**A "Family Night" tour of the American Can Company plant in Oregon. Visitors are watching the operation of a can tester.**

hurry on to an area that doesn't require so much of his attention.

A guide service, made up from the people in the department, can lend a more personal touch to the trip through the department. Volunteer guides are best, but if the supervisor has to assign the guide jobs, he should make sure to pick people with the proper qualifications. They should be neat in appearance, know the operations, and be able to talk easily to the people. It will be the guides' job to explain to the visitors what the department does, in language they can understand.

Each department should have more than one guide, so a relay system can be set up to take the visitors through in small groups. This avoids having groups of visitors standing around without attention when they come into the department. The number of guides will depend on the size of the department and how long it takes visitors to get through it.

To make sure the guides' stories are approximately the same, it might be a good idea for the supervisor to go over the department route with them just before the open house. He can tell them approximately what the visitors should be told and how much. An overenthusiastic guide has much the same effect as cluttered signs, that is, the visitors will feel trapped and want to hurry on.

If a full-fledged guide service isn't practical, a good arrangement is to mark out the route with a few signs and station key people from the department at the points of interest. These key people can explain each part of the department's story in turn,

before directing the visitor on to the next point of general interest.

Whatever the arrangement, make sure the visitors aren't given too much detail. The explanations may seem sketchy to a person who has worked in the department a year or more, but they will seem pleasant and informative to the visitors.

### Souvenirs

Usually, the public relations staff will have prepared some kind of printed material, a souvenir of some sort for the visitor to take home. The supervisor can sometimes add to this by presenting visitors with a small souvenir peculiar to his own department. It doesn't have to be fancy and doesn't have to have the firm's name on it; the visitor will remember where he got it. Souvenirs are especially worthwhile for children and younger visitors, who are even more likely to keep some memento of the tour than adults. The souvenir will provide a constant reminder of the friendly visit and the function of the plant in the life of the community; many public relations counsellors consider souvenirs the single most important detail in an open house.

### Name cards

During the open house, all departmental personnel should have name cards to wear on their coats. The name cards should have, in addition to the name, the person's title or job function. The cards will enable the visitors to spot the company people for answering questions, providing guidance, or merely talking

**New Jersey school teachers on a tour of their local industries get the low-down on textiles at Forstmann Woolen Company plant.**

to. The names and titles should be printed clearly in large block letters and should be the same size and color for all people in the department regardless of position. The identical cards will cut down shyness on the part of the lower ranking members of the department.

The open house is a good opportunity to have an "alumni day" for all the members of the company who have retired. Usually, the public relations department handles the invitations, but the supervisor can add an extra invitation from the department and make sure the alumni are made to feel at home in the department. If the department and the supervisor go all out to fuss over the retired people, it will create a lot of good will. The oldsters will be pleased to know the company still thinks of them.

The public relations staff usually does the over-all planning for an open house or plant tour. Sometimes, however, the supervisor can play a valuable role in departmental arrangements. Such extra effort "gets everyone in on the act" and goes a long way toward insuring the success of the occasion. ◆

## Good Advertising

It was Bruce Barton, writer and advertising executive who said: "For good or ill, your conversation is your advertisement. Every time you open your mouth you let people look into your mind."

Most of us feel reasonably confident that we convey a pretty good impression most of the time. But here are a few common phrases that too many use unthinkingly, at times, without realizing their irritating effect.

*Your face is certainly familiar, but I don't recall the name.* There's a well-aimed sock right where it hurts the most—the ego. Just a polite way of telling a person, "I didn't think you were important enough, when I was introduced, to bother to remember your name."

*Don't blame me—I only work here.* Our old friend, the buck-passer. If he were president of his company (which he won't be), he'd still be looking for someone to pass the buck to when things go wrong.

*Some people get all the breaks!* That is, everyone (or nearly everyone) but the speaker—who, by some quirk of fate, has been singled out for the crumbs in life. There could be a chance, of course, that he wouldn't recognize a break when he saw one, because it would involve a little extra work and greater responsibility.

*It wouldn't have worked out anyway.* Plain sour grapes, of course. A common way of projecting bitterness and resentment (because of frustration) onto the thing a man failed to obtain or accomplish, by belittling it and thereby finding consolation for his disappointment.

*You can't expect to get ahead by being nice to everyone; you've got to get tough!* Of all inane remarks, this is the "most inanest." It doesn't make sense—unless we confuse "nice" with "overly apologetic" and "obsequious," and "toughness" with "firmness," which are about as similar as the North Pole and the Equator.

—Carroll H. Jones, Jr., The Stevens-Davis Company, in *Personnel Journal.*

# what price GAW?

*By Henry G. Riter, 3rd*

**More than a century ago, a discerning Englishman wrote: "The Americans will perhaps lose their freedom when they begin to reap the fruits of it, for the energy necessary to acquire and hold freedom, and the ease which follows the enjoyment of it, are almost incompatible."**

AMERICANS talk at great length about free enterprise, but few persons have completely defined it in their minds. Like any one of our freedoms, free enterprise is entwined with our one great American freedom.

Our economic freedom has grown up with our political and religious freedom. I recently traced the development of what was called the Conestoga wagon – what we have come to know as prairie schooners. They were first made about the time of the Revolution in Conestoga, then a village in Lancaster, Pa. And the men that drove them had their hands so full with the reins that they smoked small cigars called "Stogies," –also from Conestoga.

As the frontier moved westward with the growth of the country, the wagon-makers moved west with it– and one of those wainwrights grew, along with our country, into one of our great manufacturers of automobiles. His name was Studebaker.

Free enterprise is the right of the buyer to go to the market and shop for what he wants, to reject the products of one manufacturer and turn to another, to buy or not to buy at

all. It is the right of the housewife to go to town for bacon and come home with a new hat (if she feels that she can escape her husband's indignation).

Our American concept is first of all the right to work—without interference from government or labor unions. And after that, it is the right of the worker to change his job—even to quit and go fishing if he chooses—or to strive to be a manager, and put in all the time he wants in the evening to learn the business.

Free enterprise is the right of the investor, large or small, to risk his capital, and to increase it if possible. It is the right to win or lose—to retain what he gains, or to seek greater returns.

It is the right of management to build a company, to plow back earnings into the business, to develop better tools and to promote greater production which in turn regenerates the economic cycle.

It offers the individual the freedom to choose his own course of action, rather than benevolent guidance along a course chosen for him by others. It offers the individual the opportunity to seek whatever values he desires, in whatever way he desires. It then offers the individual the reward for his own successes or imposes the penalty for his failures.

Bruce Barton tells a story. He says he was standing at the desk of a big Western hotel when two big oilmen met.

"It seems to me I ought to know you," said the first oilman. "Your face is familiar, but I just can't seem to remember where we met—"

"You ought to remember me," replied the second. "I drilled three holes for you once—and all of them were dry."

Both of them laughed—great big laughs that echoed through the lobby of that hotel. Those laughs are important. Every man and woman in the country should have heard them. They symbolize our whole system of freedom in everything – even enterprise.

Whoever writes about the losses and mistakes of men such as these? Whoever stops to think that for every good well there are at least eight duds? Or that only one expensive drilling in 243 brings in a gusher? Who, in short, ever talks about the dry holes? Yet even the best and the biggest oil men have them.

When the first J. P. Morgan died the public was amazed to read that in his safe deposit box were several million dollars worth of stock certificates—*worthless* stock certificates.

The Bible describes the years with-

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Mr. Riter is Chairman of the Board of the National Association of Manufacturers and is president of Thomas A. Edison, Inc., West Orange, New Jersey. He joined the staff of the Edison Co. after serving 37 years as an investment banker. As 1955 President of NAM, Mr. Riter traveled some 75,000 miles addressing business men and industrialists.

out profit as "the years the locust hath eaten." Call them the years of the locust. Call them dry holes. They add up to the same thing.

The important thing is that men keep trying. Out of the risks they take – out of the sharp collision of competition and the profusion of ideas–out of the investment and the work–come the jobs and the products that enrich our standard of living and make America what it is–a world of equality and of opportunity. And by opportunity I mean the possibility of going under sometimes but also the chance to fight your way to the top if you keep on trying.

This brings us to the guaranteed annual wage. Suppose that when a man wanted to start a business we said to him: "You have to be sure of having enough money to pay all your workers for a year."

I can well imagine what he would say:

"How can I do that? I haven't sold anything yet."

There's the rub. Every employer should do all he can to stabilize production and jobs through the latest industrial techniques. He should be sympathetic to the desire of employees for greater job security. But his first objective is to get customers–and without customers all the industrial techniques in the world won't do him a bit of good.

### *Customer is always right*

Some people would have you believe there is something sinful–something to be ashamed of–in an honest profit. But the first responsibility of the businessman is to run a successful business–at a profit. And to maintain a successful business a man must have a product that can be sold. He must – in other words – have customers. I don't know who it was, but we should honor the man who said: "The real boss in any business is the customer."

You may have heard about the floor-walker who became tired of his job and gave it up for a position on the police force. When a friend asked him why he had done it, he said:

"Well, the pay and the hours are good. But what I like best of all about police work is that the customer is always wrong."

This forgotten man–the customer –is the big boss behind all of us. His name doesn't appear on any of the payrolls. He has no social security number in the company files. Sometimes you don't see him, and all too often, you're not aware of him, but he makes his presence felt at every turn.

He is the hardest fellow in the world to please. He doesn't give a hoot about what you did yesterday, or the day before. It's what you do today that counts. And as soon as you stop doing a job, or start charging too much for your products, he scratches your name off his list and gets someone who will produce for him–at the right price.

This forgotten man, the customer, isn't very interested in the guaranteed annual wage, any more than he's interested in labor monopoly as a

whole, or the "right-to-work" laws in eighteen states. He's interested only in product and price, and the only time you get a reaction from him is when he stops buying the commodity you sell. Maybe it's because fixed costs, such as the guaranteed annual wage, have forced your prices beyond the point of no return. You'll find out then. And it may be too late.

Let's examine for a moment the Supplemental Unemployment Benefit plans Reuther got from Ford and General Motors. While he didn't get all he sought, he did get his foot in the door. The agreements he reached with the two companies provide for lay-off pay—not for a full year of 52 weeks, but for 26 weeks—and not up to 100 per cent of pay, but 65 per cent for the first four weeks after a week's waiting period, and 60 per cent of pay for the 22 weeks after that. The supplemental payments are to come from a common fund which the company is to establish by depositing five cents for each man-hour of work. At the end of two years, if no lay-offs occur, $208 will have been deposited for each worker.

Many of the senior men will never be laid off, even though money is being deposited for the hours they work. Furthermore, the chances are the senior men are family men, and the supplemental unemployment benefit plan discriminates against the family man in the amount of benefits he may draw in comparison with a single man.

For example, in Michigan, in the case of two men, one of them single, the other a married man with two children—the single man would draw

"About our order for two cranes —I think there's been a mistake."

$15.20 for the first four weeks and $11.72 for the next 22 weeks, but the married man with two children would draw little more than half for the first four weeks, or only $7.76, and still much less than that, or only $3.94 for the next 22 weeks.

### *Effect on incentive*

It is assumed that when a man is laid off he will try to find himself another job. But, on the other hand, a man receiving 60 per cent of pay might not be willing to go to work. For a while, perhaps, he might prefer to go fishing.

I don't think anyone can say how much incentive would be lost. It depends to a great extent on the individual. But the 52-20 Club after the war did give us some idea of what might happen. In the farm areas, where $20 was just about board and wages, there was a high percentage of people who got aboard and rode straight through the 52 weeks. In the country as a whole, about 10 per cent of the veterans went the whole 52 weeks. In the industrial areas, where wages were well above the $20, fewer than three per cent of veterans collected unemployment insurance for the full 52 weeks. But in Puerto Rico, where the benefit level was almost equal the average wage, 62 per cent of Puerto Rican veterans collected unemployment compensation for the full 52 weeks.

You can judge from this what effect a high percentage of lay-off pay has on incentive to work. Any plan for idle-time pay is bad, but consider what will happen if the full guaranteed annual wage starts making inroads into our economy.

Walter Reuther has declared that the Supplemental Unemployment Benefit plans he has obtained are only the start and that he will keep on pushing until he gets his full Guaranteed Annual Wage.

Such guarantees would: 1. Strengthen the tendency to freeze a worker on his job. 2. Create even greater inequities. 3. Conflict with state laws. 4. Drain state unemployment compensation reserves. 5. Imperil many companies, especially the newer and smaller ones.

And on the national level, wage guarantees would soon: 1. Discourage risk capital. 2. Bring about a sharp decline in new business and consequently new jobs. 3. Intensify and prolong downswings and rob the upswings of buoyancy. 4. Encourage inflation through wage maintenance in the face of lowered output, and, 5. In the end throttle our free economy.

### *The attitude of the members*

Union members are not as strong for GAW as Reuther would have us believe. To hear him talk you would think the guaranteed annual wage is the Big Goal as far as labor's rank and file is concerned. The facts reveal otherwise.

Given a wide open question in a recent public opinion survey, by Opinion Research Corporation, Princeton, N. J., fewer than one in ten employees asked for GAW over

other benefits. They showed a far greater interest in bigger take-home pay, bigger pensions and more liberal health insurance.

As a matter of fact they showed more interest in steady work rather than pay without working, and, of course, steady work is management's goal as well as the worker's.

That is the picture of the guaranteed annual wage. Briefly, it is a picture of pay without work and with no goods being produced; of another rigid item of cost placed like a yoke onto the shoulders of management; of more large sums of money tied up in special contingency funds; of a deadening of the incentive to plan, to work, to use freedom of opportunity and freedom of choice, to save, to invest and to profit by the fruits of one's talents.

### *American flexibility*

The great wonder of America is its flexibility and its ability to adjust itself in any situation. This land of ours has built up the greatest productivity on the face of the earth, created an unbelievable standard of living, improved health, lengthened the span of life, produced a mechanical wonderland in which labor-saving devices take the place of man's brawn.

But that is no reason why we should hang weights on the American way of life and spur it on to run a faster and faster course. That's like the farmer who stopped feeding his jackass and then lamented its departure from this world with the observation:

"I can't understand it. He was just getting used to not eating."

One of the things that gives me great concern is the current inclination to adopt policies and philosophies which pile on additional costs and responsibilities, the dangers of which are obscured by the peak prosperity we are now enjoying.

### *Giving in to expediency*

Under the spell of a high volume of business and unprecedented production, we are letting down our guard to many things that may cause serious trouble, not only to business but to our whole American economy. Under this prosperity wave, I fear that we are taking the temporarily expedient course of yielding to pressures that we would have resisted in other days and which we may some day wish had been resisted today.

National output has jumped from one new peak to another, month by month, and is higher than ever before. Production and retail sales are setting new records. Manufacturers' backlogs have increased and businessmen have been enlarging outlays for plants and equipment. Unemployment has declined steadily. Consumer incomes—the best guide to consumer buying power—continue to rise.

Nevertheless, I am concerned over the way we are drifting. Too many of us are apathetic. Too many of us are willing to let George do it. And, too often, George doesn't have the

interests of American business at heart. In fact, sometimes quite the contrary.

The heritage we received from our fathers did not consist of harnessed horsepower, space ships, or college stadiums larger than the Coliseum in Rome. Our security was in our ability to make plenty grow from our fields and forests, our mines and plains. Our guarantees resided in our hands and our minds—but mostly in our hearts.

If all of us in America will turn our heads, minds and hearts to the problems we face today, our heritage of individual freedom will be infinitely stronger and richer in real security than any contract men can write or statutes dictate. ◆

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## Cut Shipping Operation Time in Half

Passing steel strapping under cartons weighing from 75 to 350 pounds was a tedious, time-consuming job at Charles Bruning Co., Chicago. August Gatto, shipping supervisor, came up with a solution that speeded up the job and eliminated the labor of lifting the cartons.

The shipping carton is made up of corrugated paper specially reinforced where steel strapping exerts its maximum pressure.

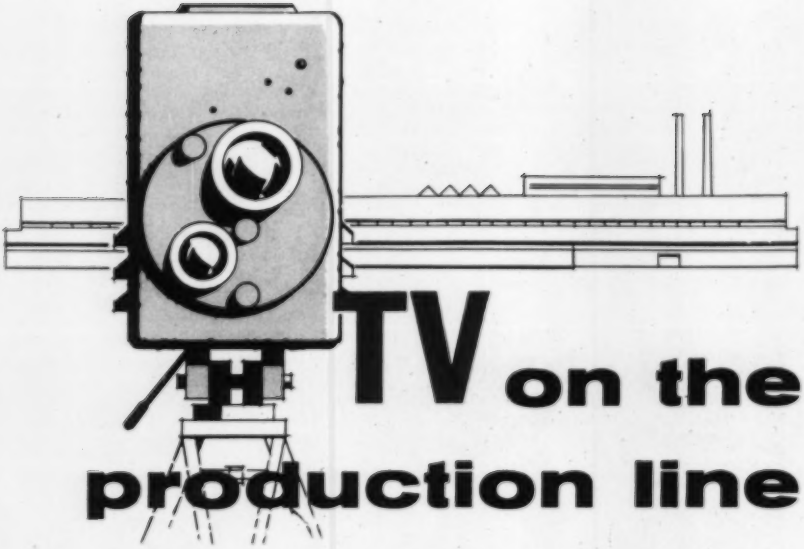
However, the cartons still had to be lifted to pass the strapping underneath. After some experimentation, Mr. Gatto developed a grid of ¾-inch by 2-inch channel irons. The Bruning maintenance department made up special carts and hand trucks equipped with these channels.

Here's how the shipping operation proceeds now: Six men are engaged in the steel banding operation. Each of them is equipped with a strapping dispenser and a ⅝-inch machine. The strapping used is ⅝-inch, .015 gage.

The average carton costs about $1.00 plus $.15 for strapping.

It takes a man about 10 minutes to staple, load, and strap a carton together —about half the time of any previous methods used by Bruning.

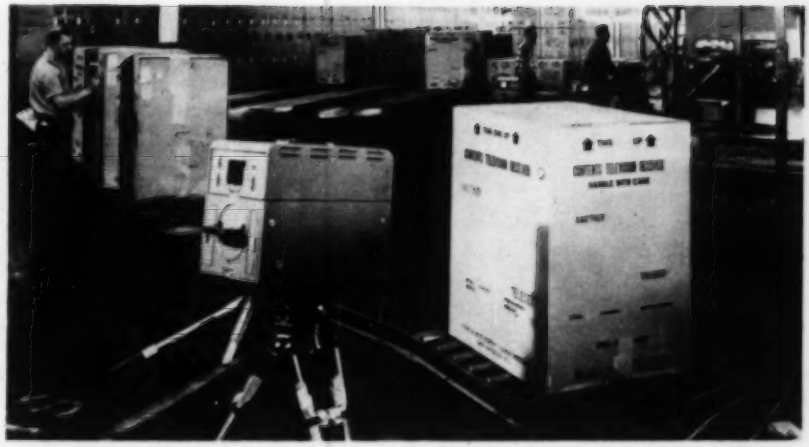
*—Mill & Factory*



# TV on the production line

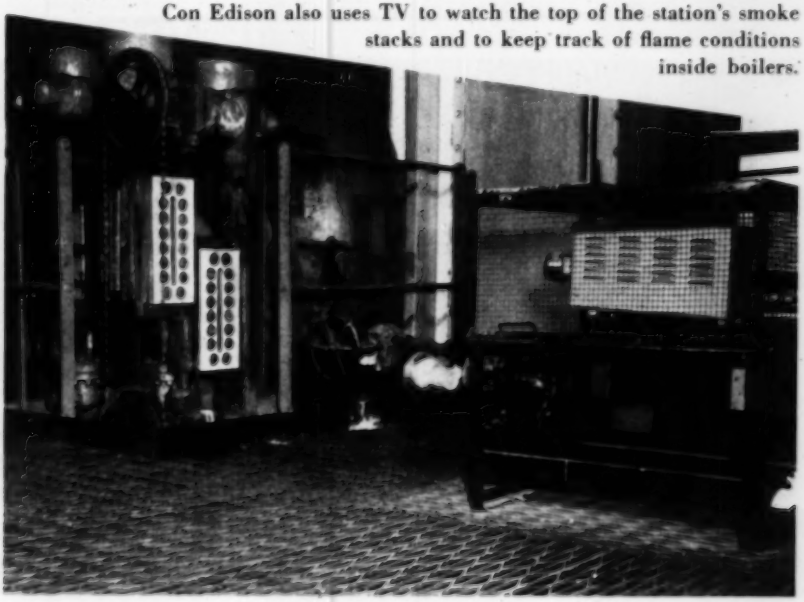
A few years ago there was tremendous whoop-de-do every time a company decided to put in a closed circuit television system to keep tabs on its production operations. It doesn't seem as though there is as much fanfare about industrial TV now, but that's because its use in mills, factories, power houses and research labs has grown so much; it is becoming more or less commonplace.

The reason industrial TV is meeting with such wide acceptance is its extreme adaptability. To borrow the pitch line from one of the leading suppliers of industrial television equipment, TV can be an aid to industry whenever it's too dangerous, too difficult, too expensive, too inconvenient, too inaccessible, too tiring, too far, too hot, too cold, too high, too low, too dark or too small to observe operations directly.



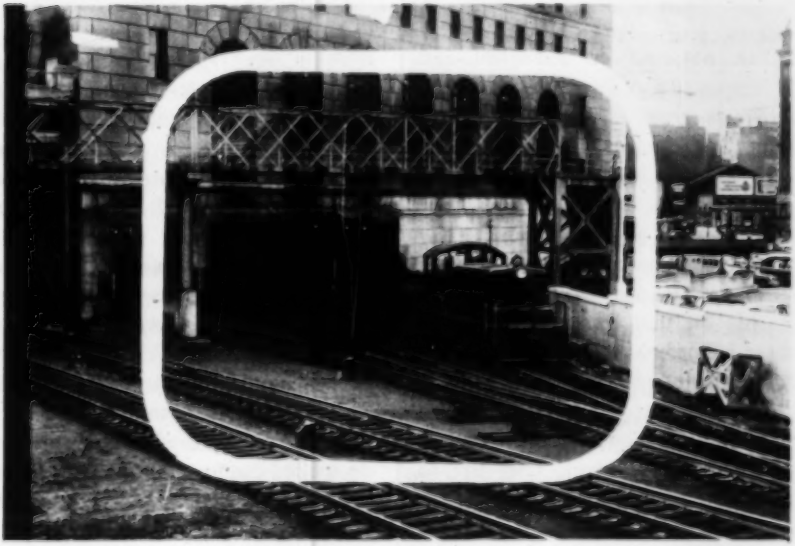
**Closed circuit TV is being used by traffic and production managers to check serial numbers on cartons and to keep track of other important traffic data.**

**TV camera focuses on boiler level gage (bottom level) at a Con Edison power plant. Picture of gage is transmitted to boiler control room (bottom right) several floors away, making it possible for operator to check on the water level in boilers. Con Edison also uses TV to watch the top of the station's smoke stacks and to keep track of flame conditions inside boilers.**

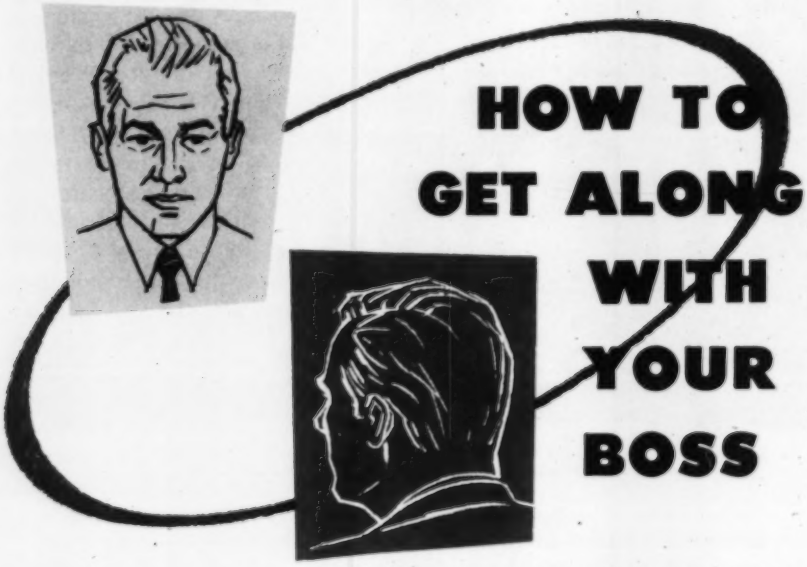


Operator of skip car at Calumet Hecla, Inc. (above) gets clear view of TV screen of cable position on guide sheave wheel (top right) which is located 1200 feet underground. If image on the television screen shows that the cable is getting out of alignment, the hoisting operation is slowed or stopped.

Bottom photos: Pennsylvania Railroad is using closed circuit television at its Pittsburgh terminal area to aid car switching operations. Formerly it was impossible for the train director in the control tower to see the switches at work. With television he can view the whole car switching process clearly.



*It's a problem that's with you every day . . .*




Reprinted from *Management Training*, by William J. McLarney, published by Richard D. Irwin, Inc., Homewood, Illinois. Revised edition 1955.

THE AMOUNT of authority and responsibility a supervisor can exercise is greatly influenced by his boss. Some bosses—not by circumstances but by their nature or make-up—tend to exercise tight control. They want to make all the decisions. They expect their men to follow orders, to do as they are told. They reward people on that basis. They expect their subordinates to come to them for decisions—not with decisions.

On the other hand, under similar circumstances, other bosses tend to exercise loose control. They like to give their men outlines of the problems and as much freedom as possible in working out the solutions. They act more or less as guides. They expect their assistants to use their own judgment, to try out their own ideas. They expect their subordinates to come to them with decisions—not for decisions.

Some subordinates, even those in supervisory positions, have similar tendencies in the way they receive or react to leadership from their bosses. Some like to be led by a superior who exercises tight control; they like to have what they are to do spelled out for them clearly. They want to know exactly what is expected of them so that they, in turn,

can line up their subordinates. They don't want to take chances, but like to follow clear-cut, rigid orders. They expect to obey and to be obeyed.

On the other hand, some supervisors like to take chances—to be told the goals and given the freedom to choose their own way of reaching them. They want a minimum of bossing.

Most bosses (and subordinates, too) could be classified somewhere between these two extremes. Boss and subordinate don't have to be closely matched in type in order to operate together effectively. In most cases the subordinate is able to adjust to whatever kind of a boss he has over him. However, when the boss is an extreme of one type and the supervisor working under him is an extreme of the other type, it may be impossible to develop a workable superior-subordinate relationship. In extreme cases like this, the best solution may be for the subordinate to seek a transfer rather than to continue a bad relationship that might end in his being fired or quitting.

But it is the exceptional boss (or subordinate) who is the extremist. The way most bosses operate depends on circumstances—the kind of training they've had, the nature of the work that is being done, the kind of people they are supervising, and the kind of boss they in turn are reporting to.

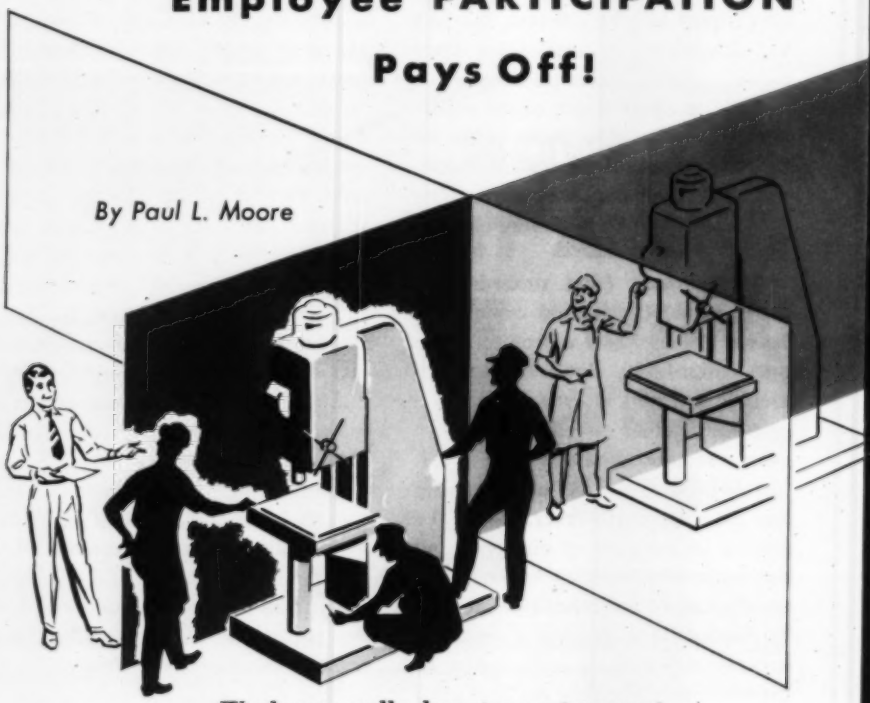
Some bosses believe in pushing authority and responsibility as far down the line as possible, while others are slow to delegate. A boss may hold back authority and responsibility for a number of reasons. He may simply like to exercise a great deal of authority. There might be certain types of jobs he enjoys doing himself. He may not have a system of controls worked out to enable him to check closely to see whether certain responsibilities are being carried out. Perhaps he feels that his subordinates are not capable of carrying out certain responsibilities, or maybe established job descriptions prevent his delegating certain duties. Finally, the vagueness of his policies—or even his lack of policies—may prevent his subordinates from knowing what he wants, so that they have to come to him for decisions instead of with decisions. Acquiring more authority and responsibility from the boss presupposes that the supervisor is not avoiding the responsibilities he now has.

The supervisor who is a leader studies his boss to find out how he operates, to figure out his policies, to analyze his thinking, and to find out just what he wants. He asks himself, "How would the boss handle this problem?" The supervisor tries to learn what types of jobs the boss likes to delegate and what types he likes to retain or hold control over.

Finally, the supervisor builds up the boss's confidence in him by constantly increasing the efficiency of his work group through methods improvement, by seeing that the work coming out of his unit is complete, and by seeking new responsibilities. ♦

# Employee PARTICIPATION Pays Off!

*By Paul L. Moore*



**Workers usually do not expect or want the right to decide departmental matters, but they do want the right to be heard**

PARTICIPATION plans, under which employees are consulted on management problems, are still fairly rare. A few companies, perhaps no more than a hundred or so throughout America, have taken the bold step to a complete plan of employee participation. The results where these plans of participation have been in operation, have been little short of phenomenal.

For example, a company I know personally, has, in a period of five years, increased its production by approximately one-third. This has been accomplished without adding significantly to its work force and with no major technological improvements. Workers have increased their earnings; the company has prospered. There has also been a gain in worker satisfaction which, though difficult to measure, is apparent everywhere.

How does the employee participation idea work? Perhaps the following illustration, contrasting the results obtained with and without its use, will clarify some of the basic principles of participation and suggest ways they can be adapted to any work force.

A couple of years ago, the manager of a furniture factory decided to buy a new type of wood working machine made in Switzerland. The machine appeared to be a very efficient one, with a high degree of flexibility. The manager was confident that the new machine would enable the factory to maintain current production at a great saving, so he arranged for the purchase on his own initiative, without consulting any of the workmen who would actually use the machine.

For a year and a half, everything possible was done to get the expected production out of the new machine. Finally, it became apparent that the company already owned a machine that could produce anything the new one would and do it twice as efficiently. The Swiss machine is now for sale at a fraction of its original cost.

Contrast that with the results when the factory manager used the participation principle in purchasing another, different type of machine. About six months ago, the management of the firm decided the machine was needed and studied the makes that were available. Several competing machinery firms offered models that seemed to fill the bill, so workers in the department were told of management's plans and were asked to make suggestions.

### *Men will cooperate*

Every man except one went, on his own time and at his own expense, to a machinery show in a nearby city. Comparing notes, they agreed on the machine they thought would best do the job. It was purchased. That machine has been in operation now for several months, and is turning out production at double the rate management thought possible. The factory manager is convinced that a good part of the success with the second machine is due to the fact that the workmen participated in its selection.

In another case, a branch superintendent, found the participation plan valuable when he was faced with the difficult problem of moving his department into very cramped quarters. The engineering department drew up tentative plans and the superintendent looked them over carefully and suggested a few changes. Then he asked each of the

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**Paul L. Moore, for the past four years, has been head of the Department of Business and Industry, a phase of the Continuing Education Service at Michigan State University. His previous experience includes 15 years in industry, approximately half of which was with Montgomery Ward as Training Director and Personnel Manager.**

80 people in his department to look over the plans and suggest changes.

He explained the problem and showed the reasons they were moving into the cramped space. He stressed that management was anxious to make the best use of every inch of available space. Then he asked them to make any suggestions they thought would improve the situation.

The workers turned up a number of worthwhile ideas which were incorporated into the final layout. When the move was made, all of the people in the department cooperated fully and there was a minimum of friction.

One of the most common misconceptions among supervisors is that workers are concerned only about what is in the pay envelope. A great deal of evidence, including numerous employee attitude surveys, indicates that this isn't true. Actually, such things as security, a sense of belonging, a feeling that the work is important, are normally matters that mean more to the worker than the amount of pay he receives.

People will often resist changes when they have had no part in the planning. On the other hand, they will frequently fight to the last ditch for a project they have helped develop—they feel it's theirs.

Perhaps the greatest danger in using employee participation, however, is the failure to distinguish between the right to be heard and the right to decide. Workers generally don't want the responsibility of making decisions. They want a chance to express themselves, but they expect the supervisor or manager to be the real leader and make the final decisions.

The highest aim of a participation plan—or any plan of human relations—is to get people to perform their tasks because they want to do them. One of the best ways to do that, and to create a loyal, cooperative group of employees, is to give them a hand in the planning. ◆

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## Foremen's Bargaining Powers

In the day-to-day relationship with the hourly workers and the union stewards in the handling of grievances, foremen conduct more collective bargaining than is done in contract negotiations. This bargaining overshadows in importance, in the time it takes and in the cost, the bargaining that takes place every year or two concerning the terms of the contract. Many terms of the contract derive from decisions of the foremen in the plants, and it is they, who, day by day, interpret and apply the contract, decide points that its terms do not explicitly cover, and exercise the right it reserves to the company to manage the plants and to direct and control the working force.

—Earle E. Langeland, in AMA's *Manufacturing Series* No. 213

## Problems in Communications

*Harry D. Kolb, Employee Communication Division, Esso Standard Oil Company at AMA Office Management Conference, New York City.*

A common communication problem is "Nobody tells me anything. Our armed services have a standard saying, 'There's always somebody who never gets the word.' Certainly you feel this sort of slight keenly. More often than not, however, you aren't actually inconvenienced because you didn't get some piece of company news—you're just a bit hurt that no one thought you were important enough to tell first. And, incidentally, if you get some news your boss should have gotten direct, but didn't, then you *are* in a dilemma. If you tell him, as you should, he is likely to be peeved at you, as well as the source."

"We've all seen incidents where people lacked the courage to tell employees some upsetting news which was going to affect them sooner or later. Can such news be kept buried? No, not for long! And not only does it get distorted if left to the grapevine, but it disturbs productivity for a long time."

To help groups of employees "get the word," try employee forums with factual presentations of problems—or informal coffee-break meetings. One executive even schedules a regular weekly appointment with each of his subordinates, in the subordinate's office, to make certain there's no breakdown in communications.

"The key point in this matter of getting news and keeping your own people informed is this: Occasions must be created—they can't be left to chance." A closely related problem is "Nobody asks my opinion. This stems from the belief that disagreement with the boss will be foolhardy, or that agreement with him will be viewed icily by our associates." *(Turn page)*

Getting past these barriers to real expression of opinion requires more than words. One way is to make it clear to subordinates that they are not just "letting off steam" but that their opinions are genuinely wanted. "And their opinions must be taken into consideration in the decision-making process."

"This sampling of ideas can also be a rewarding process in itself. Countless experiments have proved that ideas can be generated by a group, even without close study of the details of a problem." One key rule for stimulating ideas: "Hold back on the evaluation process. That is a rejection process which dries up creativity. Let the decision making come later."

The question of stimulating the upward flow of communication is keyed to the supervisor's concepts of the right way to direct people. The supervisor's approach in directing people is best if varied with the subject and issue at hand. "He must keep looking for the type of problem where it is good to seek opinion in advance of solution and also for the type where the decision-making process can be a joint participative process."

A third area of difficulty is "I'm forever having difficulty in getting the big boss to see what he should be able to see." "Remember that people tend to react according to their attitude toward a set of facts, rather than to the facts themselves. Example: The small boy likes pie. That is a fact. But, when you serve him a smaller piece than his sister, he is unhappy. He is getting pie, which he likes, but his attitude toward that fact is hostile.

"A related principle in the attitude field: People tend to react according to their attitude toward the source of the facts more than to the facts themselves. Example: You read a political speech. Are you influenced more by the logic or by the source of the speech? Do you read with an eye to 'Where is the gimmick in this?' or are you willing to examine each idea on its merits? We are all conditioned in our reactions by feelings—try as we may to be objective."

Instead of relying on logic to persuade people, try suggestion. See if you can get the other person involved in the idea. And don't rush the decision. "If the idea is good, it can be held in check safely while attitude-building toward the idea has a chance for its gradual growth."

## "Long-Hair" Is Lifeline

*A. A. Berle, Professor of Law, Columbia University, at AMA Top Management Conference, New York City.*

Although the United States is far ahead of the rest of the world in engineering and applications of research, in *pure scientific research* it is behind Western Europe. Now we need the men who throw out lines beyond any dream of application; the long-hair is your savior and your life line. ◆

# LETTERS TO THE EDITOR

### Clear View from the Top

Dear Sir:

I particularly like the article "Interest in People: Key to Successful Communications" (January 1955, p. 22) by the Reynolds Tobacco board chairman. It's good to see a top management executive with such an accurate understanding and insight on what goes into good communications.

*Dean D. McKinney, Educational Supervisor, Hammermill Paper Company, Erie, Pa.*

### Tool for Trainers

Dear Sir:

Congratulations on your excellent publication. You have inaugurated a needed service to supervisors in their role in management. In addition, those of us in the training field have been provided with an excellent "visual" tool toward stimulating supervision in its thinking.

*John P. Stanford, Training Director, Celanese Corporation of America, New York, N. Y.*

### Suggested Topics

Dear Sir:

I would like to suggest these topics for discussion in an early issue of SUPERVISORY MANAGEMENT: counseling, discipline and human relations.

*R. G. Holly, Assistant Superintendent, Lawyers Cooperative Publishing Co., Rochester, N. Y.*

● In our February issue you will find "No Fishing Out of Plant Windows," an article on discipline. We plan to carry at least one article on human relations in each issue.—ED.

### Good News

Dear Sir:

I received my first issue of SUPERVISORY MANAGEMENT today. You have a very interesting magazine which I am sure is going to be a valuable addition in helping me improve as a supervisor.

*John H. Troutt, Chief, CMU Section, Internal Revenue Service, Atlanta, Georgia.*

### Well-insured Success

Dear Sir:

Congratulations on what looks to us as a most excellent magazine. In my opinion your publication offers a very substantial contribution to management in that it offers such a broad cross section of ideas from business leaders throughout the country.

*Sherwood Jones, Manager, Publication Division, Pacific Coast Office, Metropolitan Life Insurance Co., San Francisco, California.*

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We are always interested in receiving comments, articles, or suggestions from readers. All material should be addressed to: Hubert Clay, Editor, SUPERVISORY MANAGEMENT, American Management Association, 1515 Broadway, Times Square, New York 36, N. Y.

AMA